

**BEST GAMES FOR THE NEW APPLE TV**

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# APPLE

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**2016**

**156**  
PAGES  
INSIDE

## Here's what to expect from Apple

### Smart Keyboard & Pencil

We try out Apple's  
iPad Pro tools



### Tips for iPad & iPhone users

Become an expert  
with these tricks



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# Welcome...

**A**s is customary at this point in the year, this issue we are looking at what we think Apple has planned for 2016. With an event rumoured for March, we might just be seeing a new Apple Watch, the long awaited 4in iPhone 6c, and rumour has it, a new MacBook Air. We don't think we'll be seeing the mythical Apple iCar any time soon, though. Find out what to expect on page 95.

We also have an overview of the biggest wins, fails and surprises of 2015 (page 7) including the arrival of the iPhone 6s, the new Apple TV, the Retina MacBook, the Apple Watch, Apple Music. It's was actually quite a busy year for Apple, can the company maintain the momentum in 2016?

If you have already got yourself a new Apple TV you'll be wanting to take a look at our round up of best Apple TV Games on page 104.

This month we've been testing the iPad Pro Smart Keyboard and Pencil. We're a bit disappointed by the keyboard which typically has a US layout, but we are impressed by the pressure sensitive Pencil, just frustrated that it can't be used with the other iPads.

Finally we have amassed some iPad and iPhone tips because let's face it, no matter how well you think you know how to use your device there are always handy tricks that can make your life easier. Find out more on page 117.

We hope you've enjoy the issue. Feel free to send us your feedback via [facebook.com/MacworldUK](https://www.facebook.com/MacworldUK) or email [karen\\_haslam@idg.co.uk](mailto:karen_haslam@idg.co.uk).



## Apple Watch 2, iPhone 6c and iPad Air 3 launch event

Rumours suggest Apple to unveil new products in March

**A**pple will hold its next event in March 2016, at which it will unveil the Apple Watch 2, alongside the rumoured iPhone 6c and the iPad Air 3, according to reports.

Rumours suggest that the Apple Watch 2 will appear at that event but that it won't ship until April, a year after the first Apple Watch went on sale.

Apple has held events in March over the years, including the launch of the Apple Watch and MacBook in 2015 and the launch of the iPad 3 back in 2012. It seems likely that the Apple Watch 2 won't be the only new product to launch at the March event. A number of Apple products are due



an update around that time. We think we may see the following new Apple products at the rumoured March 2016 Apple event.

## Apple Watch 2

In April it will be a year since the Apple Watch launched, so perfect time for a new model to appear. The new Watch is said to offer sleep tracking and better health sensor technologies. It may also offer better battery life, a FaceTime camera, and crucially that it will be less reliant on the iPhone.

## iPhone 6c

According to a Macworld survey, 20 percent of people polled want a smaller 4in iPhone and it looks like they may get their wish. Rumour has it that an 6c is coming and that it could arrive in the spring.

With this in mind, it seems likely that an Apple Watch event would also include a launch of the new 4in iPhone, which is said to come in a colourful metallic case (rather than the iPhone 5c plastic case).

It's also expected that the new phone will offer an improved camera compared to the iPhone 5s. The A8 processor is likely to be Apple's choice for powering this new iPhone, rather than the A9 in the iPhone 6s and 6s Plus. While it's not thought that it will include 3D touch found in the iPhone 6s and 6s Plus, it is expected that the 6c will include Touch ID for use with Apple Pay.

## iPad Air 3

The iPad Air wasn't updated in September 2015, so we expect to see an update soon, and the rumoured March event would be perfect for this launch.

Rumours suggest that the iPad Air 3 will be even thinner than the iPad Air 2, that the aluminium it is crafted from will be even stronger than the current model, that a rose gold version might make an appearance, and that the megapixel count on the camera might improve.

We also expect that A9X chip (as found in the iPad Pro) might appear in the new iPad Air 3.

## MacBook Air

Another product rumoured to be in the pipeline is an update to the MacBook Air with the 11in model disappearing from the line up and a new 15in model being added.

There have been some rumours it may gain a Retina screen, but it seems unlikely as that would put it in competition with the MacBook Pro and the MacBook, and we imagine Apple wants to keep the price down. It is likely the new MacBook Air will gain Force Touch features, however. **Karen Haslam**





# Apple's hits, misses and surprises of 2015

We round up the company's biggest moments of 2015

**A**s Apple makes more and more money by selling more and more iPhones, it seems like the company barely has to try to remain at the top of the heap. And yet 2015 was one of Cupertino's biggest years ever in terms of innovation, with product refreshes almost across the board (sorry, Mac Pro), a new device category (hey, Apple Watch), and a streaming service to rival Spotify (Apple Music).

But the shiny patina of new devices didn't distract anyone when Apple missed the mark this year, as it sometimes does. From the weird staggered rollouts of the Apple Watch in spring and Apple Pencil in fall to Apple Music's iCloud disaster, Apple wasn't without its missteps in 2015.

Then there were the head-scratching rumours, the indecipherable product decisions, and more moments that made us go, “Wait, what?”

Let’s recap Apple’s big year.

## Record-breaking iPhone sales

Apple made \$32.2 billion by selling 48 million iPhones in the last quarter of 2015, capping off what CEO Tim Cook called Apple’s “most successful year ever.” The company’s revenue grew to almost \$234 billion in the fiscal year, which included just two days of iPhone 6s and 6s Plus sales. Apple sold 13 million iPhones during that launch weekend, and is expecting to make between \$75.5bn and \$77.5bn when it reports holiday quarter earnings at the end of January.

The iPhone has been on the market for eight years, so how does Apple continue to sell so many? It’s thanks in part to China – the Chinese continue to buy iPhones in droves, and this time around, the country was one of the latest model’s launch day markets.

## (Almost) everything is new

Apple didn’t just put out new iPhones, as it does every fall. Practically every product in the company’s lineup was refreshed in 2015. We got new MacBooks, including a 12in gold model, iMacs, the long-awaited 12.9in Pro and a high-powered iPad mini, a completely overhauled fourth-generation Apple TV, an entirely new product category with the Apple Watch.

These hardware updates weren’t minor ones, like the lackluster iPad mini 3 released last fall. The



new iPhone's flagship features include 3D Touch and a revamped camera; the iPad mini 4 is now as powerful as an iPad Air 2, the new MacBook is the most portable laptop around; and the Apple TV has a full-fledged App Store and Siri integration.

This year was huge for Apple hardware.

### Apple TV's long-awaited reboot

The new Apple TV deserves a separate shout-out for being a really, really good set-top box. Apple waited three years to overhaul the TV, and in that time it was left in the dust by rivals Roku, Amazon Fire TV, and even Google's Chromecast streaming stick.

That ended in November with the new Apple TV, which has its own App Store and a healthy roster of must-have apps, plus a brand new touchpad remote



with Siri integration. It can even support games, with the touchpad remote substituting for a game controller (unless you want to shell out more for an MFi game controller like this one).

The Apple TV isn't perfect – although it's gotten better after a key software update – and more tvOS apps are desperately needed. Plus, we still have hope that Apple will cut through the red tape and pull off a live TV streaming service that will let us finally cut the cord. But the fourth-generation TV is better than ever, and its £129 starting price tag isn't too bad, either.

## Apple wins over Taylor Swift

Apple Music ran into trouble before it even launched (and then some more trouble afterward, which we'll get into later), but the company managed to get the world's biggest pop star on its side.

Apple was planning to withhold royalties during the free three-month trials offered to Apple

Music subscribers, and when Taylor Swift caught wind of this, she took to Tumblr to post a gently admonishing open letter to the company. They listened, promising to pay royalties during the free trials after all, and Swift endorsed the service by offering up her 1989 album to stream for the first time, then giving Apple the exclusive rights to her 1989 World Tour Live documentary, which aired on 20 December. (Apple paid Swift for that pleasure.) It was a win for all involved.

### Apple Music and the scrambled libraries

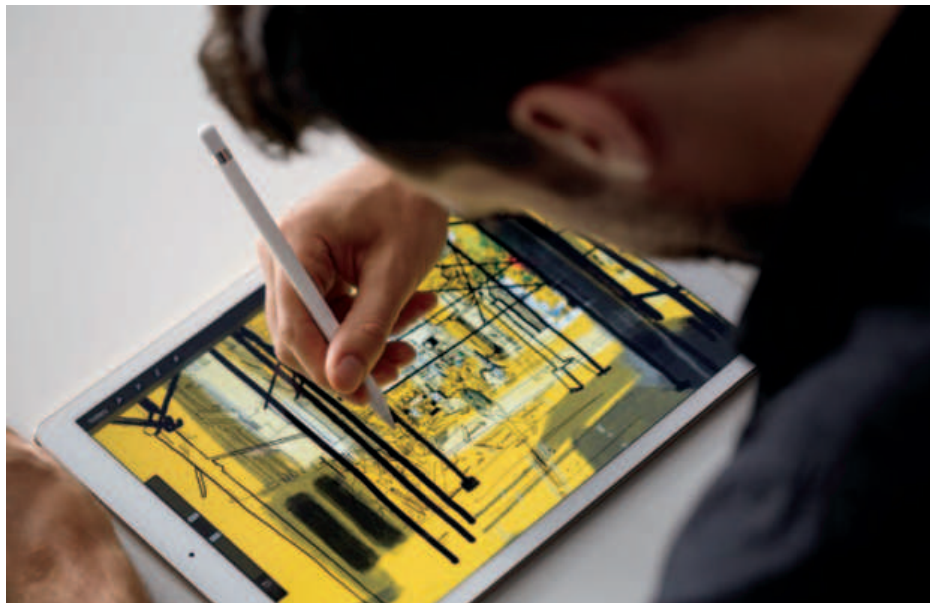
Apple rolled out Apple Music on desktops with iTunes 12.2, bundling its streaming library with your iTunes purchases with the help of iCloud Music Library. But when iTunes users enabled iCloud Music Library to merge streaming tracks with purchased ones, they watched iTunes mangle their existing libraries.

In some cases, there were minor problems like album artwork gone wrong. In other, more serious circumstances, iTunes wiped or corrupted thousands of tracks from some libraries, resulting in hundreds of angry Apple support forum complaints and one very high-profile rant.

Apple Music managed to rack up 15 million listeners in spite of the ruckus, though who knows how many more subscribers would've stuck around if their libraries had remained intact?

### Where's the Apple Pencil?

The 12.9in iPad Pro launched in November with two complementary accessories, the new Smart Keyboard and Apple Pencil, the company's first



iPad stylus. Without the stylus, the new tablet is just a really, really big iPad. With it, creatives have a tool that makes the most of all that screen real estate. So when the iPad Pro went on sale and its accessories, specifically the long-awaited Pencil, were in short supply, Pro buyers were more than a little unhappy. While the Smart Keyboard was also on back order, Apple was also selling an excellent third-party option, Logitech's Create. Apple Pencil has no equivalent, so its absence was a frustrating one for Pro users who had to wait weeks to use the giant tablet to its full potential.

## The strange Apple Watch launch

For its most personal device ever, Apple restricted purchases to online only. Buyers couldn't line up at Apple stores to snag an Apple Watch at the height of



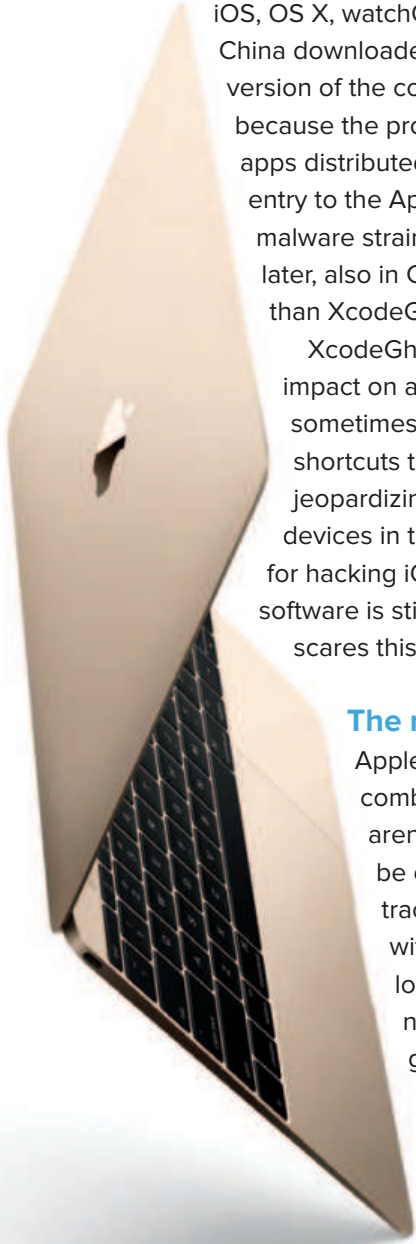


the hype, and some watch models were on back-order for weeks after launch.

Not being able to buy Apple's latest device anywhere but online at Apple.com was a bit of a shock for buyers used to finding the latest gadgets in retail stores, too. In fact, as Macworld columnist Jason Snell said, the real Apple Watch party didn't start until six months after its release, when Apple finally was able to fulfil demand in launch countries and widened the watch's availability to include third-party retailers.

## Malware hits iOS App Store

2015 will be remembered as the year malware finally penetrated the iOS App Store, proving that Apple's walled garden isn't impervious to infection. Before this year, you mainly had to worry about malware on jailbroken devices, because Apple's App Store approval process is notoriously tough. But this year, the iOS App Store was hit twice with malware scares, both times in China. Apps infected with malware managed to bypass the company's security safeguards by using a modified, sketchy version of Xcode, the code used to write apps for



iOS, OS X, watchOS, and tvOS. Developers in China downloaded XcodeGhost, an infected version of the code, from Chinese servers because the process was faster. Then those apps distributed the malware after gaining entry to the App Store. YiSpecter, another malware strain, popped up just weeks later, also in China, but was less severe than XcodeGhost.

XcodeGhost didn't have a huge impact on apps, but it proved that sometimes developers will take shortcuts that Apple didn't foresee, jeopardizing the safety of your devices in the process. The going rate for hacking iOS is \$1 million, so Apple's software is still incredibly secure, but the scares this year prove it's not perfect.

## The new MacBook

Apple's lithe 12in MacBook combines technologies that aren't yet standard, but could be one day. The Force Touch trackpad, super thin keyboard with reduced key travel, and lone USB-C port make the new MacBook a truly next-generation laptop, which is awesome in theory. In reality, the keyboard isn't the easiest to type on, and the USB-C connector makes the new MacBook incompatible with

basically every other device you own. It's frustrating for now, because the USB-C ecosystem is still so small. That will change in the future, but people who drop £1,049 on the 12in MacBook will face struggles that buyers of other MacBook models don't, at least for awhile longer.

## The Apple Car rumours

This one is a head-scratcher for sure. Earlier in 2015, rumours began to swirl that Apple was recruiting a slew of car experts to join the company. At the same time, Apple CEO Tim Cook and design chief Jony Ive began hinting in press interviews that the automobile space was an interesting one. Of course, Apple hasn't come out and said, "Hey, world, we're building an electric car." But all signs point to a secret auto project in the works at 1 Infinite Loop.

Let's review the evidence: Apple has hired not just car experts, but specialists in deep learning and artificial intelligence. It's unclear if Apple is exploring an electric car or a self-driving one, but over the summer, documents revealed that Apple was on the hunt for a private facility to test something – presumably a car, since that facility is a former naval station where other self-driving vehicles have been tested. Then in August, Apple execs met with California Department of Motor Vehicles reps to discuss the state's self-driving vehicle regulations.

Apple has been interested in cars for some time – that's why the company developed CarPlay, which puts the iPhone experience in your car's dashboard. We wouldn't be surprised if Ive designed the coolest car on the block – we're just not expecting it anytime soon. **Caitlin McGarry**



## Smart Battery Case extends iPhone's life

Case boosts iPhone's battery life by 80 percent

**S**ure, it's just an iPhone battery case, but what marks this one out from the many others is the manufacturer: Apple. The £79 iPhone 6s Smart Battery Case is the first sign that Apple is ready to acknowledge that its phones are too thin to contain adequate batteries. The case adds 80

percent to the battery life – and about 100 percent to the thickness – of an iPhone 6 or 6s.

Unlike most third-party battery add-ons, the back of the case isn't flat, but has a bulge in the middle housing the battery.

Apple claims the iPhone 6s allows you to surf the Internet on LTE for “up to” 10 hours, a figure that could reach up to 18 hours with the external battery. The battery could also boost talk time from up to 14 hours to around 25, while video could play for up to 20 hours rather than 11.

The catch is in the words “up to” – and Apple is by no means unique in using them: Pretty much every electronic device manufacturer does the same.

If you spend your days in an office with subdued designer lighting in hyper-connected Silicon Valley, where the nearest cell tower is no more than a few hundred meters away, you're going to get something close to the maximum theoretical battery life as your screen dims and the phone whispers to the nearby network.

For the rest of us, lighting is harsher and cell towers more distant, so our phones crank up the brightness and shout to the network, draining their batteries all the faster. That “all-day” battery can often be empty long before it's time to go home.

It used to be possible to keep a spare phone battery for situations like that, but one of Apple's innovations with the first iPhone in 2007 was to make the battery





non-removable, a feature it has replicated in every model since, and which other manufacturers have since adopted, too.

One justification given for using non-removable batteries is that without the need for a removable protective cover and clips to hold it in place, the phone can be made thinner – or the battery can be bigger for a given thickness of phone.

Until now, Apple has chosen the former course (as have other manufacturers), making phones ever thinner, frustrating many who would like to be able to use their phones for longer and who would barely notice if their phones were a millimetre thicker.

They'll certainly notice the additional thickness of the iPhone 6s Smart Battery Case, which appears to add about 7 mm to the 7.1 mm iPhone 6s, to judge by the photos Apple has released. Had

Apple chosen to make the iPhone 6s that much thicker to begin with, it may well have been able to boost the phone's battery life by 400 percent, not 80 percent.

Maybe it just wants a slice of the profit that the many other manufacturers of external battery cases are making – or maybe Apple is testing customer acceptance of a thicker new phone. **Peter Sayer**



# Guide to the Retina display

We reveal the pros and cons of Apple's Retina display

**P**ut simply, a Retina display is any display to which Apple has decided to apply the name. Retina is an Apple brand for which there's no specific definition. There are however, features that set Retina displays apart from non-Retina screens.

The first, and most important is pixel density. When Steve Jobs launched the iPhone 4, and with it the first Retina display, he described it as having a screen with so many pixels packed closely together that they were imperceptible to the human eye at a distance of twelve inches. He went to great lengths to explain that, because the iPhone 4's screen packed in 300 pixels per inch, most people wouldn't see them at all when the phone was a foot from their eyes.

Since then, Apple has launched several devices with Retina displays. Some have pixel densities of more than 300 pixels per inch, some with less. How can they all be called Retina? Because there are two crucial elements to whether or not pixels are perceptible: density and distance. The further your eyes are from the screen, the lower the pixel density needed to make the pixels ‘disappear.’

Generally speaking, the bigger the screen, the further your eyes are likely to be from it and so the lower the pixel density required to ‘qualify’ as a Retina display. So, for example, iPhones from 4 to 5s had a pixel density of 326 pixels per inch, while the current 27in iMac has only 218 pixels per inch. Given that, for most of us, the distance we sit from a 27in screen is more than one and a half times the distance at which we hold an iPhone from our eyes, the lower pixel density is irrelevant.

## How does a Retina display compare to non-Retina?

In simple terms, Apple ‘converts’ a device’s display to Retina by doubling the number of pixels vertically and horizontal, meaning it has four times as many pixels as its non-Retina counterpart.

If it did that and nothing else, however, there would be a problem. User interface elements like menus and icons would look tiny. To compensate for this, Apple created what it calls HiDPI mode, where each interface element is doubled in size vertically and horizontally and so appears at the same size as it would on a non-Retina display.

The effect of a Retina display is to make everything look more crisp. Text, especially,



Dear Reader,

You may already know Félix, nationally bestselling debut, largely inspired by *The Time*

In *The Map of the Sky*, the st  
*Time*, Palma again draws f

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Non-Retina (left) and Retina iPad displays:  
a small but noticeable difference on text

benefits from Retina – it looks smoother, with the curves on characters looking like curves instead of jagged steps.

### What's Retina HD and Retina 4K/5K?

Steve Jobs painted Apple into something of a corner when he described the pixels in the iPhone 4 as imperceptible to the human eye. Where do you go from there? How do you describe a screen that's even better? Apple's answer has been to borrow terminology from the video and broadcast industries.

When the iPhone 6 came out in 2014, it had a vertical resolution of 750 pixels, a little more than the 720 pixels which forms one of the standards for HD video. The 6 Plus had a vertical resolution of 1080 pixels, exactly the number of pixels needed for the higher of the two HD video standards. Never one to miss an opportunity for a catchy label, Apple labelled the iPhone 6 and 6 Plus' displays 'Retina HD.' It did the same in 2015 with the 6s and 6s Plus when they launched in 2015 with the same screen resolutions.

HD, however, is relatively old news in the world of video. Today, the highest quality TV screens have



4K displays, which have 4000 pixels horizontally. So when Apple launched a 27in iMac with 5,120 horizontal pixels in 2014, it used the same naming convention and called it 'Retina 5K.' In October 2015, it launched a 21in iMac with a horizontal resolution of 4096 pixels (and a pixel density of 218ppi), and called its display 'Retina 4K.'

## Which Macs, iPads and iPhones have Retina displays?

As of the end of 2015, the only Apple device (iPod nano excepted) with a built-in display that doesn't have Retina, at least as an option, is the MacBook Air. That may be rectified in 2016, or it may be that, following the launch of the MacBook earlier in 2015, the MacBook Air is phased out. There are also a 21.5in non-Retina iMac and the now-ancient MacBook Pro with SuperDrive (which hasn't been updated since 2012).

## What about the Thunderbolt display?

Sadly, despite having launched a 27in iMac with a Retina display in 2014, Apple has yet to upgrade

its Thunderbolt display to Retina. Its resolution is 2560x1440 pixels. To put that in context, it has the same number of pixels horizontally as a 13in MacBook Pro and horizontally as the 12in MacBook.

While Apple still sells the Thunderbolt display on its website, it's failure to upgrade it in more than four years would seem to indicate that it has no enthusiasm for promoting it, making it unlikely it will be upgraded to Retina soon, if at all.

### Do other manufacturers use Retina?

No other manufacturers use the name Retina – Apple's lawyers would soon have something to say if they did. But several makers of smartphones and tablets, in particular, have displays with pixel densities which are at least a match for Apple's devices, and in some cases far exceed it.

Examples include Sony's Xperia Z5 Premium which has a resolution of 3860x2160 pixels – just shy of 4K – on a 5.5in screen, giving it a pixel density of a monstrous 806ppi. And Samsung's Galaxy S6 has a resolution of 1440x2560 pixels – known as Quad HD or QHD – on a 5.1in screen, giving it a pixel density of 577ppi.

Whether there's any point in having 4K and QHD resolutions on a smartphone is debatable. If Steve Jobs' assertion was right and 300ppi on a smartphone is enough to make pixels invisible, then squeezing in more pixels would seem to be redundant.

A Retina display then is not one with the highest resolution available, but may be the optimal balance between image sharpness and the power needed to provide those images. **Kenny Hemphill**



## Buying advice: **Best Mac for graphic design**

How to pick the right Mac for creative design work

**M**acs were at the forefront of the desktop publishing revolution, bettering PC rivals when it came to colour accuracy and typography. The differences between OS X and Windows systems are less pronounced these days, and file compatibility is typically strong when using suites available on both systems, such as Adobe's Creative Cloud.

Nonetheless, the Mac still finds favour with the majority of designers. This is down to several factors: reliability; excellent niche apps only available for Mac (such as Sketch); and, frankly, Macs looking a lot nicer than PCs. (Designers aren't shallow, but they do like style.)

So you want a Mac, but is right for you? We've gone through Apple's range and figured out the best

machine for certain types of designers, but first want to cover some general tips you should be mindful of when buying a new Mac.

### **What you design affects the Mac you buy**

The further you go back in time, the more defined and focussed creative roles were. But these days, a designer may work across many fields. That's not to say there aren't still people solely working up magazine layouts in InDesign, but the modern designer is just as likely to be delving into illustration, interface design, and 3D.

The extremely rapid shift towards digital further complicates matters. A decade ago, perfect colour reproduction might have been the main concern for a designer when it came to buying new kit. But today, designers are increasingly likely to be working on screen-based design. The nature of employment may also require them to be more mobile.

### **RAM and storage for graphic design Macs**

Two things that haven't really changed over the years is the tendency for design applications to be RAM-hungry, and for the majority of design projects to require a fairly hefty amount of storage. In both cases, you need to be careful, because Apple now largely considers Macs sealed units. In most cases, you can no longer later add extra RAM or storage.

With storage, you can at least utilise external drives for housing weighty folders and archives. With RAM, there's nothing you can do; our advice is to order extra RAM with your Mac, even if Apple's pricing for this is akin to having your wallet mugged. (If you buy a Mac where you can still add RAM at

a later point, such as the Mac Pro or 27in iMac, go third-party instead.)

## The best displays for graphic design

We touched on this earlier, but design has become more complicated of late from a displays standpoint. Once, you'd have wanted a high-end matte display from a company like Eizo, with almost perfect colour reproduction. Some traditional graphic designers reel when confronted by the glossy displays found on an iMac (although it has to be said that these displays aren't as glossy as they were a few generations ago).

But things aren't so simple. Many designers work primarily on projects intended entirely for screen, including digital magazines, websites, and app interfaces. High-res displays are a further consideration. Apple's mobile devices all now boast Retina displays, as do a great many Android and



Windows Phone equivalents; on the desktop, the rise of 'Retina' is slower, but seemingly inevitable. You therefore must consider whether your role will primarily entail creating content for such displays, and buy a Mac accordingly. (Also consider future-proofing. If your Mac's going to last a few years, buy for the present and future, not the present and past.)

## Desktops vs portable Macs for designers

What kind of designer are you when it comes to the jobs you do? Are you the type that never leaves the office, in which case a desktop system might suit? Are you a roving freelancer, augmenting a different in-house team on a month-to-month basis? If so, you probably don't want to be lugging a 27in iMac around on a train.

Often, notebooks are seen as the best compromise regardless, due to providing flexibility. Even if you only rarely visit clients or work away from an office, you can take a portable Mac with you. But they're also more expensive than broadly equivalent desktops. For example, the mid-range 13in MacBook Pro (2.7GHz i5; 256GB SSD; 8GB RAM; Intel Iris Graphics 6100; 2560x1600 resolution) costs £1,199, the same as the priciest 4K 21.5in iMac (3.1GHz i5, 1TB HDD; 8GB RAM; Intel Iris Graphics 6200; 4096x2304 resolution).

But now let's get down to business: the best Macs for specific kinds of designers...

## Best Mac for print design: 27in iMac 5K

Once you get beyond business cards and tiny flyers, print projects tend to benefit from a large canvas on which to design. If you're working on magazines,

you want to be able to have a double-page spread before your eyes, as close to full-size as possible. When designing larger fare, you don't want to be navigating it on a tiny notebook display.

You don't get bigger than the 27in 5K iMac, which boasts a screen resolution up to a mammoth 5120x2880. Some designers might still be a bit sniffy about the glossy display, but those in modern iMacs are vastly improved over previous generations, and can be successfully colour-calibrated if you're not happy with what you get out of the box.

Any of the existing models will do the job for print design. Pay more, you get processing power boosts and improved graphics cards, but the £1,449 model should be fine. For a more responsive system, you might consider swapping out the hard drive for an SSD, though. RAM can be upgraded at a later date.

## Best Mac for web design:

### **MacBook Pro with Retina display**

Web design canvases now vary wildly (in the sense responsive sites must support anything from a watch face up to a massive telly), but so too do work environments. While it's undoubtedly advantageous for web designers to have a big display, it's even more important to be mobile, in order to take on new jobs at a moment's notice.

A MacBook Air would be sufficient for web design tasks, but if you've got the money, go for the MacBook Pro with Retina display. The high-res screen gives you a better impression of how your work will look on mobile devices and modern notebooks, a Pro isn't much heavier than an Air, and





a Pro can be configured to be far more powerful. We'd recommend going for the mid-range 13in model (£1,199), which has a 256GB SSD – anything smaller is miserly. Consider increasing the RAM to 16GB on purchase, too.

### Best Mac for interface design:

#### 27in iMac 5K

Interface design can of course encompass web design, but with this option we're thinking more in terms of apps. Many designers these days are creating interfaces for iPad, iPhone and Android apps, along with content for smart televisions and games consoles.

The ideal Mac here would give you a 1:1 impression of what you're designing, at full size. The 27in 5K iMac's 5120x2880 display just about manages that, even enabling you to squeeze in an iPad Pro interface in portrait (2048x2732). A cheaper alternative would be the 21.5in 4K iMac (from £1,199), which boasts a resolution of 4096x2304 – enough for an iPad Air display in either orientation or an iPad Pro in landscape. With the 21.5in model, be mindful you cannot upgrade the RAM at a later date, so start with 16GB.

## Best Mac for 3D design work:

### Mac Pro

The Mac Pro is colossally expensive. At its cheapest, with no added extras, you're talking £2,499, for which you could buy two 21.5in 4K iMacs and still have change. But for certain kinds of work – notably high-end 3D design – you need all the power you can get, and the Mac Pro has that in spades.

Do be mindful of the small amount of internal storage (256MB SSD) – the unit is primarily designed to be used with external drives. And since the Mac Pro hasn't had a refresh in two years, it might be worth hanging on, if possible, to see what transpires update-wise in 2016.

## Best Mac for designers on a budget:

### Mac mini

Realistically, any modern Mac is broadly suitable for the majority of design work – it's just less powerful machines will slow you down. Any Mac is also an investment in your career, but if you're just starting and really can't afford to splash out on the more expensive fare recommended elsewhere, a Mac mini will do.



The low-end model is best avoided, but the mid-range Mac mini 2.6GHz i5 with 16GB of RAM will set you back £729. You can then add a perfectly decent third-party display from the likes of Dell for around £150. The advantage with this kind of system is its modularity – should one component fail, you can replace just that part rather than everything.

## Best Mac accessories for graphic designers

There are far too many specific accessories to recommend in a feature like this, and so we're going to offer some general tips.

Regardless of the Mac you buy, ergonomics should be a priority. Designers tend to burn the midnight oil, and that can wreck your back and neck if you don't have a decent working position. Get a good chair, and ensure your eye meets a point roughly a third of the way down your display. If using a notebook, do not sit hunched over it for hours – consider buying a separate display, keyboard and pointer device when working in an office.

Alternate input devices are worth checking out. Apple's Magic Trackpad 2 is fine for the occasional bit of doodling, but really you want a stylus-based tablet system for drawing. Even the smaller consumer-oriented Wacom tablets are fine as a starting point – an A6 will be small enough to use alongside a keyboard, and can also double as a general pointing device, enabling you to 'snap' the cursor across a large display (rather than mouse or trackpad 'scrubbing'). For illustrators, though, a larger tablet will be more beneficial in terms of precision and responsiveness. **Craig Grannell**



## Buying advice: **Guide to Apple's Magic peripherals**

We explain which Macs are compatible with Apple's extras

**A**pple updated its iMac lineup, and a set of new peripherals alongside: a new Magic Mouse, a Magic Keyboard and an updated Magic Trackpad 2. These peripherals can be bought as part of the new iMac bundles, but they are also available separately, and work with some older Macs. The question is, how old can your Mac be and still work with the Magic Trackpad 2?

In fact, the important factor is the version of Mac OS you're running rather than the age of your hardware. We'll look at the system requirements of the three new peripherals individually, but they're pretty much the same: we just find that the Magic Trackpad 2 is a little stricter about the version of Bluetooth that it requires.

## Magic Trackpad 2

The official documentation warns that the Magic Trackpad requires a “Bluetooth 4.0-enabled Mac with OS X v10.11 or later.” That’s El Capitan, of course – the most recent version of Mac OS X. It’s a free upgrade from Yosemite – and from any version of OS X going back to Snow Leopard – but a fair few people haven’t made the update yet, so this is something to bear in mind. So you need El Capitan. Here’s a list of the Macs that can make the upgrade:

- **iMac (mid-2007 or later)**
- **MacBook (13in Aluminium, late 2008), (13in, early 2009 or later)**
- **MacBook Pro (13in, mid-2009 or later), (15in, mid/late 2007 or later), (17in, late 2007 or later)**
- **MacBook Air (late 2008 or later)**
- **Mac Mini (early 2009 or later)**
- **Mac Pro (early 2008 or later)**
- **Xserve (early 2009)**

To see how strict the requirements are, we tried pairing the trackpad with a Mac running Yosemite (OS X 10.10) and sure enough, it didn’t work properly – although, oddly enough, it did work with a wired connection, so you’ve got that option in a pinch. It was only when we unplugged the Lightning cable that it stopped working.

Clearly the problem is related to the wireless pairing process – and this isn’t simply an issue with the version of Bluetooth, which was 4.3 on this particular Mac. In other words, expect to have to upgrade your Mac to El Capitan, if you haven’t already, in order to be able to use this device.



## Magic Mouse 2

Like the Magic Trackpad 2, the Magic Mouse only works with Macs running El Capitan. If you've not upgraded yet, take a look at the list of El Cap-compatible Macs above to see if your machine is able to do so.

Beyond that, you just need to have Bluetooth to be able to set up a wireless connection with the Magic Mouse 2. Whereas the Magic Trackpad 2 specifies Bluetooth version 4.0, the mouse isn't anywhere near as fussy: it just requires a "Bluetooth-enabled Mac computer with OS X v10.11 or later".

## Magic Keyboard

The system requirements are the same as those for the Magic Mouse 2: any Mac that's running OS X El Capitan (check the list above for Macs that are compatible with El Capitan) and equipped with some version of Bluetooth. It doesn't need to be Bluetooth 4.0. **David Price**





# Set up an iTunes library on a network-attached server

Free your iTunes media from the shackles of your Mac

If you have a large iTunes library, you may have reached the point where you need to offload some of your media files to another drive. There are several ways you can do this. You can connect an external hard drive to your Mac, and use that to store your iTunes Media folder. If you use an iMac, this is probably the easiest choice. However, if you use a laptop, you may not want the hassle of connecting and disconnecting an external drive whenever you want to use iTunes.

Another option is to use a network attached storage device, or NAS. This is a storage device that your Mac connects to over your network – usually

via Wi-Fi, but you can also use ethernet – and that can give you vastly more storage, especially if your Mac has an internal SSD.

If you use both iTunes and another network device or app – such as Plex, a hi-fi media streamer, or Sonos' wireless home audio system – you can use the NAS to store media that other devices can access too. You won't need to ensure that your Mac is always on. In this article, I'll discuss how you can set up iTunes to use a NAS, and I'll point out some issues you need to be aware of to ensure that iTunes works correctly.

## Choosing a NAS

There is a plethora of NAS devices available, from simple, single-drive units to larger, multi-drive RAID-capable storage devices. Depending on your needs, you may spend a couple hundred dollars for a simple NAS without drives (you may have some hard drives you can recycle), or much more for a unit with five drives and RAID capabilities. Remember that if you get a simple NAS with a single drive, you still need to consider adding an additional external hard drive to back up the files on the NAS itself.

I recently bought a WD MyCloud Ex2 NAS. This two-bay device is available without drives, selling for around £130, and it allowed me to use two 2TB hard drives I had in a closet, having upgraded another storage device to 4TB drives. (The MyCloud





is also available in versions with drives, with capacities from 4- to 10TB.)

If you're going to choose a NAS to store your iTunes library, first consider what other way you can use the device. I use one of the hard drives on my NAS for my MacBook's iTunes library, and the other for Time Machine backups. Many NAS devices support Time Machine backups, so if you want a device for this purpose, check its specs.

The MyCloud, like some other NAS devices, also has an iTunes server feature, which lets you stream music from the device to a computer running iTunes or to an Apple TV. This means that any computer in your house can stream your media files, without the Mac whose library is stored on the NAS running.

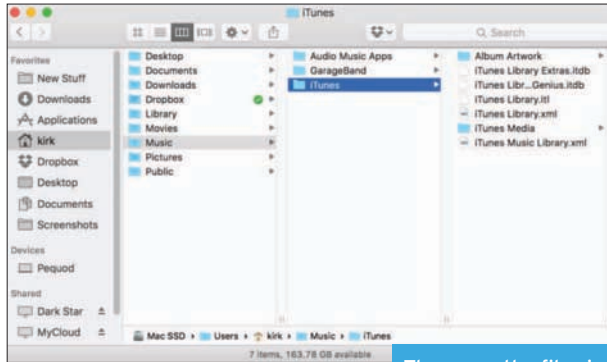
## Moving your iTunes library

When you've chosen your device and set it up, it's time to move your iTunes library. There are two ways you can do this, and each option has pros and cons.

- You can move just your media files to the NAS, and keep your iTunes library files on your Mac
- You can move all your iTunes files (media and library files) to the NAS

### Move just your media files

In your home folder is a Music folder, and, in that, an iTunes folder. This contains a number of files, such as your actual iTunes library file, and some support files. There's also an Album Artwork folder (which caches artwork from your media files), and an iTunes Media folder, which contains sub-folders for different types of media: Music, Movies, TV Shows, and so on.



If you move just your media files, then your Mac retains your iTunes library file, as well as some other files; all those in the screenshot above, other than the iTunes Media folder. The advantage to keeping these files on your Mac is that when iTunes updates its library file – which happens any time you make changes to any files in your iTunes library – this process won't be slowed down by your network. However, if you have a fast Wi-Fi router, such as a recent AirPort Extreme, you shouldn't notice any lag.

However, if you move just your media files, you must ensure that your NAS (or any external drive) is mounted when iTunes launches. If iTunes doesn't see that drive, it will search in your Music folder for your media, and won't find it. It will then switch the location of the media folder in its preferences to that local folder, and copy any new files there. And this gets messy.

If you want to move just the media files, you'll need to follow these steps:

1. Back up all your files; because accidents happen.
2. Ensure that the NAS is mounted in the Finder.



Change the location of your iTunes Media folder in the iTunes preferences

3. Create a new folder on the NAS; call it iTunes, or something similar.
4. Launch iTunes, choose iTunes > Preferences, and then click Advanced.
5. In the iTunes Media folder location section, click Change.
6. Navigate to the folder you created in Step 2 and click Open, and then click OK.
7. Choose File > Library > Organize Library, and check Consolidate files. This tells iTunes to copy all the media files currently on your Mac to the new location. This may take a while, depending on how many files you have, and how fast your network is. This may mean allowing the copy to run overnight.



When the copy is finished, you can play music, watch movies, and listen to podcasts from your copy of iTunes as if the content was on your Mac

One tip for this scenario: when the NAS is mounted in the Finder, open System Preferences > Users & Groups, and click your account. Click Login Items, and drag the NAS volume to that list. This ensures that your Mac mounts the volume when you start up your Mac and log in.

### **Move your entire iTunes folder**

This is a simpler process. Just copy the iTunes folder in your home folder's Music folder to the NAS. As above, this may take a long time.

The first time you launch iTunes after the move has completed, press the Option key immediately after clicking the iTunes icon. Click Choose Library, and then navigate to the iTunes folder on the NAS. iTunes will then use this library, and, if it's not

available on the network, will alert you. It won't revert its settings to your local drive.

However, if you have a slow network, you may have issues with searches and you may see a bit of lag when making changes to files or their tags. Also, you need to ensure that not only your media files but your iTunes Library file gets backed up regularly. Leaving the non-media files on your Mac ensures that Time Machine backs them up; putting all these files on the NAS means that you need to set up another backup routine.

### What's next?

Once your iTunes media files (or all your iTunes files) are on the NAS, you use iTunes exactly as before. As long as the NAS is mounted, iTunes uses that library. The only difference you'll see is when you copy files to your iTunes libraries. You won't notice much delay with music files, but you'll definitely see that movies take a lot longer to copy to the NAS over your network.

Syncing to iOS devices will also be slower. Again, you won't notice this if you're only syncing some new music, but if you set up a new iOS device, and sync a lot of content, this will take quite a while.

Using a NAS, you can have a large iTunes library accessible from a laptop with a compact SSD, and, as I pointed out earlier, also access that content easily from other hi-fi streaming devices that can read files from a network volume. Just remember to back up your iTunes library on the NAS, especially if you've moved all your files to the device. If not, and you lose files, you may have trouble rebuilding your iTunes library and playlists. **Kirk McElhearn**



## Review: **Apple Watch**

We reveal how watch has integrated itself into our lives

From £299 inc VAT • [apple.com/uk](http://apple.com/uk) ★★★★★☆

In all the hubbub of the iPad Pro, Apple TV, and iPhone 6s launches, you could be excused for forgetting about this year's previous Apple darling, the Apple Watch.

There's been a lot of discussion of late over the Watch, in particular how it's doing and whether or not it's a flop. As someone who's been wearing one pretty much daily for eight months now, I feel like I've finally integrated it into my life enough that I've got a good idea of both its capabilities and its limitations. And believe me, it's got plenty of both.

### **Watch this**

I've worn watches on and off for my life – I even went through a brief phase, and I'm not proud of this,

where I toted a pocket watch. I know. It was the late '90s, a lifetime ago. The Apple Watch wasn't even my first foray into the smartwatch arena; that came with the original Pebble, of which I was a Kickstarter backer. But by the time the Apple Watch came around, I'd already consigned my Pebble to the pile of outdated gadgets and gizmos in my office for a year or more.

All of this is to say that in its use as, first and foremost, a watch, the Apple Watch has been a success. I wear it pretty much every day, it tells the time: done. But when it comes to the smart side of the equation, well, that's a different story entirely.

Let's take one of the Apple Watch's core pieces of functionality: notifications. This is ostensibly the simplest smart feature on the Watch: your phone gets a notification, it pops up on the Watch with a subtle vibration. Most of the time, this feature is great. It's nice to get notification unobtrusively, rather than having a phone buzz or chime, and I've found that it actually tends to not disrupt personal conversations that much, because I can generally check my Watch later at a less obtrusive time.

But it's not without problems. The other day I got a notification on my watch of a text message I'd received the previous night, which had already shown up on Messages on my Mac. And which I'd already responded to. Since notifications are routed through the Watch, I frequently see an email pop up on my iPhone or my Mac twenty or 30 seconds before seeing the notification for that email on my watch. And in a bizarre glitch – my friend, Panic designer Neven Mrgan, dubbed it The Black Plague Bug – one of my conversations constantly shows

the same two really old message bubbles at the top when I receive a new notification.

And this is all in regards to one of the Watch's simpler features, one which I use pretty much every single day. Aside from telling the time, it's the least of what the Apple Watch does, because the Apple Watch does a whole lot. The sad part is most of it not very well.

## Looking smart

At this point, I've removed most of the third-party apps and glances from my Apple Watch. Even with the native apps ushered in by watchOS 2, launching an application and waiting for it to load data is just too slow to be useful except in cases where I can't get to my phone. (The speediness of the Touch ID sensor on the iPhone 6s, in particular, has made a mockery of how much faster it is to unlock my phone and launch an app than wait for it to load on the Watch.)

Glances are likewise kind of sluggish, and having more than a few has made it largely unmanageable: there's no indication of which Glance is where, which means swiping through a bunch of them to find the one you want, only to have to wait for it to update. In watchOS 2, you can use Siri to open a Glance, but that feels a bit like using a crowbar to open a jar of pickles.

Third-party complications, another of watchOS 2's hallmark features, was something I was looking forward to greatly, but it's ultimately ended up being a bit underwhelming. I installed Dark Sky's, but most of the time it looks much like the built-in weather complication, and it doesn't seem to update



consistently, which means I have to load the app to get an accurate temperature reading... and then we're back to waiting for that to load.

### Time will tell

Eight months into the Apple Watch, it seems clear to me that it's a cool device, but it's got a long way to go. I'm looking forward to seeing what watchOS 3 brings, but I'm starting to think that it will take until the second-generation Apple Watch for the whole thing to really come into its own. Because performance is definitely the biggest impediment right now, and there's only so much that software engineering can do to make up for slow hardware.

Despite all of my complaints, nitpicks, and criticisms, I'm still bullish on the Apple Watch. As smartphones and tablets become more and more people's primary computing devices, smart wearables are going to start taking over some of the more casual uses that those categories have abandoned. The slope of technology tends towards the more personal: from desktop, to laptop, to smartphone. Wearables strikes me as the next logical progression, the Apple Watch is already staking out around on the wrist. **Dan Moren**





## Review: iPad Pro Smart Keyboard

Without a UK layout, it's hard to justify the price tag

£139 inc VAT • [apple.com/uk](http://apple.com/uk) ★★★★★

**T**he iPad Pro launched on 11 November, and with it came a new Apple Pencil stylus and Smart Keyboard accessory designed specifically for the iPad Pro review. We've spent time with all three, but here we're focusing on the Smart Keyboard, which is not only a keyboard to help bring laptop functionality to the 12in iPad, but also acts as a stand and a case to protect the iPad's screen.

## Typing experience

I'm writing this review using the iPad Pro Smart Keyboard, and am surprised to find that it's suitably speedy once you get the hang of it. To begin with, I was making mistakes in almost every word, but it only took a few paragraphs to figure out the positioning of the keys and the amount of pressure required, after which my typing speed came back naturally and I almost forgot I was using it.

That's while I'm sitting at a desk though. One of the big issues with the iPad Pro keyboard is that it can't be used on your lap. It's not sturdy like the keyboard on a MacBook, so you'll need to find a solid surface to rest it on.

Each letter key is slightly concave – the centre of every individual key is a tiny bit lower than the outer edges. This helps your finger find its place on the key quickly and easily, to prevent you from making mistakes and to help speed up your typing.

The bigger keys like the shift and delete keys aren't dipped, but you'll still find that they're easy to tap when required, and you'll find that there are all of the keys you'd expect from a normal full-size keyboard. You'll also find a dedicated key for switching to other iOS keyboards like the emoji keyboards or a third-party option you've installed.

What's surprising, though, is that there are no dedicated iOS keys on Apple's Smart Keyboard. Third-party keyboard makers have been including buttons as shortcuts for the Home button, search, brightness and media controls.

Apple has designed iOS 9 to work with the Smart Keyboard, meaning you can use several shortcuts to get things done faster like you can with your Mac.

You can find out what the shortcuts are in any app by holding down the Command, Option or Control key.

## Design

You'll find that the Smart Keyboard can hold your iPad at an ideal angle for use while typing, and that it's sturdy even when you need to use the touchscreen of the iPad itself. It's also ideal for watching movies or FaceTime calls even when you don't need to use the keyboard itself. The stand can only be used in landscape mode, of course, as the keyboard is connected to the longer edge of the cover, but that should suit most users.

I really liked feel of the Smart Keyboard's material, too. It's smooth to type on but it's also durable, made with custom-woven fabric that we imagine will hold up against grimy fingers small spillages thanks to its seamless design. When being used as a case, all parts of the Smart Keyboard that touch the screen are covered in a soft microfibre material, and the outside is a polyurethane material. It's a bit disappointing that it's not made with leather considering the price of the case, and we know from experience that the polyurethane looks well-worn after a few months of being carried around in a bag. It's also only available in a dark grey colour at the moment – we'd have liked a navy blue option too.

Plus, the cover only protects the front of the iPad so the back is vulnerable to dents and scratches. You'll need to invest in an additional Smart Keyboard compatible shell case to protect the aluminium back. Apple's own offering costs £65.

Where the Smart Keyboard's design does shine is in its low profile. It's only 4mm thick, which is pretty



impressive, so you'll hardly be adding any bulk to the iPad. It does weigh 336g, though so you'll find that it adds a bit of weight.

One of the biggest downfalls of the iPad Pro's Smart Keyboard for us here in the UK is the lack of a UK keyboard layout. The only option you'll get is a US English keyboard layout, which means no pound key. That's disappointing when you consider how much money you'll be spending on the keyboard. It costs a whopping £139, which is a hefty sum once you've already shelled out for the iPad Pro itself, which will set you back over £600.

## Battery

You'll never need to charge the iPad Pro's Smart Keyboard. Instead, it connects to the tablet using magnets in the Smart Connector and uses

conductive material to pass data from the keyboard to the iPad and power from the iPad to the keyboard.

## Price

As mentioned, the iPad Pro will cost you £139. That's a lot of cash to spend on an iPad accessory, particularly when you consider that you can get the Magic Keyboard for £79 from Apple and that's compatible with your Mac as well as iOS devices, and offers an overall better typing experience. Of course, the Magic Keyboard isn't as convenient to carry around and lacks the stand and cover functionality, but if the Smart Keyboard was around that price point we'd be much more likely to buy it. For £139 we'd like to see a back cover, backlit keys and the butterfly key design, as well as colour options and a UK keyboard layout, too. Maybe we're asking a bit much, but Apple is asking for a bit much from us, too, we think.

Additionally, you'll find it tricky to get your hands on a Smart Keyboard at the moment. On Apple's online store it's suggesting you'll have a wait of three to four weeks at time of writing.

## Macworld buying advice

We're torn about the iPad Pro Smart Keyboard. It has potential, but there are things that need to be sorted before we'd recommend spending £139 on it. We need to see a UK layout, more colour options and protection for the back of the iPad Pro. For now, there are third-party options like Logitech's Create case, which is not only cheaper at £110 but also includes dedicated iOS keys, backlit keys and protection for the back of the iPad. **Ashleigh Allsopp**



## Review: Apple Pencil

Much sharper than the average smart stylus

£79 inc VAT • [apple.com/uk](https://apple.com/uk) ★★★★★

**A**pple's pressure-sensitive Pencil is a home run, exhibiting remarkable performance on the new iPad Pro, but that should not come as a shock. The two were engineered to work together and only with each other.

The iPad screen recognises when you are using the Pencil, and in response, dynamically boosts its scan rate to 240 times per second (twice the speed it scans for your finger) to minimise latency, the time between the Pencil's point touching the glass and a mark appearing on the canvas.

Simultaneously, the Pencil's sensors work with the display to detect its position, force, and tilt via APIs in iOS 9.1 that not only register current location but predict future movement.

Press lightly to get a thin stroke, press harder to get a thicker stroke, and rub lightly with the side of the Pencil's tip to get shading action, just like using a regular pencil, though the quality of that shading depends on the app and the brush you choose.

## Sketching and writing

Straight out of the box, Apple's Pencil is a joy to use. You don't need to do any elaborate pairing or visit the Settings app – just plug the Pencil in to the iPad Pro's Lightning port to pair it, then go to town. It works as a stylus with any app, letting you launch, navigate, scroll, and complete basic operations. You can even trace over a regular sheet of paper.

But Pencil doesn't do everything. Edge gestures to access Notifications or the Control Center don't work, and you can't use it to open a second app in Slide Over or resize apps in Split View. You must still use your finger for those functions, and I'm good with that because it's not necessary, and you don't want to accidentally invoke functions with Pencil.

I tested the Pencil with Evernote, Notability, Adobe Photoshop Mix, Fix and Sketch, Complete Anatomy, LiquidText, Pixelmator, Procreate, Paper, Notes, Apple Photos, and iMovie, along with the iPad's built-in apps. Remarkably, each app performed as advertised, and in accordance with its own conventions, including Notes' nifty onscreen ruler that helps you draw a straight line. The only anomaly was the reference app Complete Anatomy, aimed



at medical students, which suffered from a slight lag time when I used the Pencil to annotate the text.

Cursive handwriting and printing can be a heartbreak with many styluses, and performance varies widely. However, I have yet to see a handwriting function that works quite as well as Pencil. (It reproduces my poor penmanship flawlessly.) Pencil is a totally natural notetaker and such a pleasure to use, that I'm almost tempted to lug the iPad Pro around for the sheer joy of writing with it. And just for the record, I thoroughly enjoyed sketching with it too, though I'm far from a freehand artist.

## Use and handling

Styluses are a personal thing. What feels right to one paw doesn't necessarily translate to another. Apple's Pencil has just the right amount of balance and heft so that I can use it for long periods of time without feeling hand strain, just like a traditional pencil. That's actually a bigger deal than it sounds. Only one other stylus I've used competes, and that's Adobe's Ink. Most other styluses wear out my hand in a surprisingly short period of time.





That said, I would have appreciated the instrument to have more of a matte feel, as opposed to the slick plastic surface. It was not hard to grip, nor did it slip from my fingers, but it would feel even better with an ever-so-slight degree of velvety friction on the surface.

That's also related to the diameter. Being a pencil, it's thin. And for drawing, that's great. But when I'm taking notes with it, I'm reminded of how I tend to go for pens with a bit of a thicker barrel to ease the strain on my hand as the words fly from my brain to my fingertips. I'm not advocating Apple make the Pencil barrel thicker, but rather expressing that the variety of tasks the Pencil affords will offer different experiences.

The Pencil is pencil-like in length, so my small hand was just about able to handle it in a natural way. It edges toward being a bit too long, and I'm glad Apple decided not to use the end tip as an eraser, like traditional pencils, because at that length, it might feel awkward.

Most styluses are an either-or affair: You're using your finger or you're using the stylus. Thanks to a new touch subsystem in the tablet, the iPad Pro can recognize both inputs simultaneously and accurately differentiate between the two.

Automatic and accurate palm rejection makes the Pencil convenient because I can actually park my fist directly on the iPad's glass while writing, drawing, or painting without having to worry about errant marks showing up on the canvas.

And that brings me to the screw-on tip. Most high-quality styluses advertise their presence with a clicky little sound that gets old really fast. When I'm stressed or frustrated with a project, the last thing I want to hear is a clickety-clack. The Pencil has a point, but its materials make a very muted sound, which is much more agreeable. Apple thoughtfully includes a replacement tip in the box, just in case.

The only problem is losing tiny things. The second tip can stay in the box until you need it, but take care not to lose the adapter that connects the Pencil to your Mac or an AC power adapter for charging, or the little cap that covers the Lightning connector, as you cannot park both on the Pencil at the same time.

### Limited use cases

To use the Pencil, which at £79 I consider reasonably priced, though on the high end of the spectrum, you also need the iPad Pro, which starts at £679 and goes up to £899. The Pencil is totally useless on any other iOS device.

It's a little disappointing that Apple limits the Pencil to iPad Pro users, when it could potentially engage a larger audience of late-model iPad users. Apple appears intent on creating a uniquely superior experience with the Pencil, so that a different kind of interaction, with perhaps more latency and less pressure sensitivity and tilt awareness, would defeat the purpose. Nonetheless, some people will stick

with their laptops and smaller iPads and never need the iPad Pro. Depriving them of the Pencil doesn't seem quite fair.

Both the Pencil and the iPad Pro hold up well in terms of battery life, and when the Pencil's charge does drain, it takes almost no time to get it up and running again. The initial charge lasts about 12 hours, but 15 seconds plugged into the Lightning connector of the iPad Pro gets you back to work for another half hour.

Getting a quick battery boost directly from the host device – without having to get up out of your chair to hunt for a cord or charger – is the way we all should work. Charging the Pencil is easier and faster than sharpening a regular pencil.

Battery life, in this case, is academic, and the Pencil has no onboard indicator. However, you can check the battery level by enabling a Batteries widget in Notification Center; plus, an onscreen alert flashes when the battery hits 5 percent.

## Macworld buying advice

If you're an iPad Pro owner, should you buy the Pencil? That's a no-brainer – Apple hit it out of the ballpark in terms of ease of use and performance. Even those who feel they have no specific use for it right now will likely find it makes life easier in various, unexpected ways.

If you are an iPad owner that does not need an iPad Pro, it's okay to be annoyed that you can't use the Pencil with the rest of the iPad line-up. I think Apple should democratize the Pencil, upgrading the next generation of iPads to take advantage of at least some of its charms. **Jackie Dove**



## Group Test: **Speakers**

Give the audio on your iPhone and iPad a boost

**T**he iPhone 6s and 6s Plus provide up to 128GB of storage, which makes them ideal for home entertainment and storing all your music and video files – even those with 16GB devices can stream the latest music through the likes of Apple Music and Spotify. With music becoming more easily available, you'll need a good speaker system to go with them, and you're really spoilt for choice these days.

There are dozens of speaker manufacturers fighting for a slice of the Apple pie, with speakers in all shapes and sizes, designed for both indoor and outdoor use. Many speakers talk the talk – but

do they walk the walk? Here we explain various features you should look out for when in the market for a new speaker for your device, including the compression technology used by the speaker, and 360-degree audio.

## Compression technology

By default, every Bluetooth audio-capable device must be able to use an agreed basic compression system, known as SBC. Sub-band coding is a psychoacoustic lossy codec – that is it discards music information deemed not so important to our ears, to greatly reduce the number of bits that must be sent in a digital music stream.

The quality of SBC varies and it runs at various bitrates, depending on how fine and deep the slices are made into separate frequency bands known as ‘bins’. Actually quality depends on how the sending device has been configured by its maker. But SBC typically runs at around 200kb/s, and has the subjective quality of MP3 at 128kb/s – which is to say, not at all good.

Alternatives are now in use thankfully. Top dog is aptX, a British invention that forms the basis of DTS cinema sound. It’s still lossy and compressed sound but amazingly nearly transparent to CD resolution at its fixed bitrate of 350kb/s. Samsung invested heavily in current aptX license holder CSR plc and now fits aptX compatibility into most of its Google phones.

Apple does not include aptX in any of its iOS devices, although Macs since Snow Leopard can use aptX Bluetooth audio. Instead, the iPhone and iPad will try to beam out Bluetooth audio using the

AAC codec, which is part of the MPEG-4 standard. Results are always better than SBC, but not quite so good as aptX.

## Amp classification

The second hindrance to Bluetooth speaker sound is the current reliance on low-fidelity amplification technology, in common with other budget consumer electronics. While natural sounding hi-fi amplifiers still use a linear system known as Class A or Class B (more typically both, to form Class AB), cheap and portable audio devices use a fast-switching PWM system to drive speakers, known as Class D.

Class D is a clever way to make amplifiers far more efficient, turning more precious mains or battery power into usable amp output power. That's particularly noteworthy in a mobile age dependent on batteries. Class D amps run cold so don't require massive heatsinks to vent unwanted heat. A complete powerful 20W amp module can be built around a small microchip, saving much space and cost. The technology has everything going for it – except sound quality, which is typically grainy, harsh, lifeless and stripped of the natural essence of music.

The smallest of speakers with a single mid-range speaker and limited volume can hide some of these issues; the challenge for the designer is to make a full-range speaker system that makes you actually want to listen to it.

## Battery life and additional capabilities

So, what should you look for when in the market for a Bluetooth speaker? A popular feature of Bluetooth speakers is “360-degree audio” – but what is

360-degree audio? Generally speaking, speakers that offer 360-degree audio are usually cylindrical or circular in design and feature drivers facing every direction, opposed to the traditional front-facing speaker setup. This produces 'room filling audio' which waves goodbye to the audio 'sweet spot' that you'll find on traditional speakers, where audio will sound best when facing a certain direction. Though it's not a deal breaker, it's usually something we look for when in the market for a new speaker.

What about battery life? While not too long ago, the standard battery life for a Bluetooth speaker was a slightly disappointing five hours, we've come along way with regards to Bluetooth accessory battery life and with many budget speakers offering upwards of 10 hours per charge, we wouldn't recommend buying a speaker that offers anything dramatically less. Also, it's worth keeping an eye out for speakers that double up as portable battery chargers, as it'll probably come in handy when using your smartphone to play music.

Some Bluetooth speakers also offer Wi-Fi connectivity, so which connection should you opt for? Traditionally, using a Bluetooth connection gives you a 10m range, which means that you'll only be able to play music from a speaker in the same room as you - any further and you'll probably experience the audio cutting out. However, Wi-Fi has a much wider reach, and could allow you to play music from anywhere in the house. With this being said, the Wi-Fi setup process can be quite stressful and require users to install a specific app on their smartphone in order to operate the speaker, whereas Bluetooth setup takes 30 seconds.



## GEAR4 SoundWave portable Bluetooth speaker

**Price: £40**

Another great Bluetooth speaker for the money is the GEAR4 SoundWave, the company's latest portable Bluetooth speaker. Black in design with a smooth-to-the-touch silicon finish, the SoundWave certainly doesn't fall into the category of ugly Bluetooth speakers, though it is pretty bulky when compared to other portable Bluetooth speakers, measuring in at 22.5x6x8cm and weighing 496g. However, with this being said, its larger-than-usual size means it can pack some serious audio equipment under the hood, which provides surprisingly decent audio – but we'll come to that.

On top of the Bluetooth speaker, you'll find a number of controls that not only allows you to change the volume, but also allows you to skip to the next track, skip back to the previous track and even pause the music completely. Though these buttons may not sound ground-breaking, a number of manufacturers are moving away from physical Bluetooth controls in favour of exclusive control via



the device playing music, but that's not always ideal and we like to have the option to control playback via the speaker.

The GEAR4 SoundWave features twin speakers that, when coupled with a passive radiator for additional bass, produces audio that's both room filling and full of bass. However, the bass isn't too overpowering – it's subtle enough to make its' presence known without drowning out the midrange. The power of the SoundWave is pretty impressive as it can reach high volumes without the distortion that you'll find with many other budget Bluetooth speakers, making it an ideal companion for those trips to the beach or the park.

With regards to battery life, you should get around six hours on a single charge of its rechargeable lithium-ion battery. You can connect to the speaker via Bluetooth with a range of 10m, although it also has an auxiliary input to be used with older devices that don't feature Bluetooth connectivity.

## UE Boom 2

**Price: £169.99**

Ultimate Ears' UE Boom 2 is the second generation BOOM, bringing with it a number of improvements when compared to the original (and hugely popular) UE Boom. The main selling point of the UE Boom 2 is its 360-degree audio, providing truly room filling audio and waving goodbye to the speaker audio 'sweet spot'. It's not just audio projection that makes the UE Boom 2 the speaker that it is though, it's shock and dirt proof with IPX7 rated water resistance, meaning it'll survive any journey you take it on.

The UE Boom 2 also boasts a 15-hour battery life, has a 100ft wireless range and can connect to two devices at once, providing a musical switch-over without having to disconnect from the speaker and stop the music from playing. It helps to make listening to music a more sociable experience, rather than having one person deciding what's played. Users can also download the UE Boom app to tweak the EQ of the speaker and even pair up with a second UE Boom 2 for a true stereo experience.

It's available in a range of colours, from a rather modest black and grey to a more outlandish orange and purple combo. The best part about the UE Boom 2 is that the company is constantly updating the speaker and adding new features, all of which can be installed via regular OTA updates, making the speaker future-proof (to a certain extent, anyway).

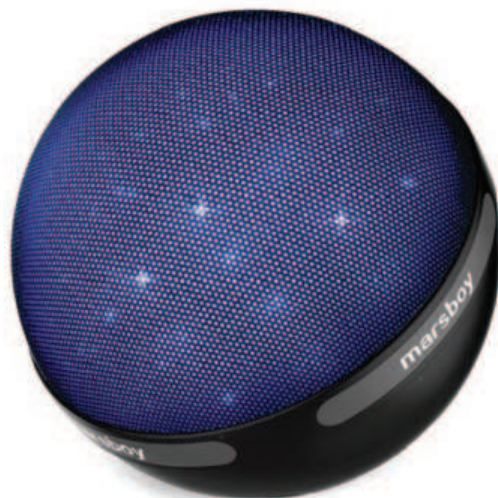


## Marsboy Orb portable Bluetooth speaker

**Price: £38.99**

Marsboy's Orb, the 5W Bluetooth-enabled budget speaker will turn your bedroom into your own private disco, thanks to its built-in colour changing LEDs. Circular in design, this black plastic speaker is half mesh and half soft-touch plastic. Below the meshed surface a series of LEDs can transmit a range of colours, creating a disco-like effect in your bedroom.

Rather than pulsating to the music, the LEDs are controlled by choosing one of seven programmes. The button to control this is found on the speaker's rim. Also here are the various controls:



play/pause, skip track, volume up/down and answer call when the speaker is connected via Bluetooth to a smartphone. You can also hook it up using an AUX cable, or take advantage of the built-in microSD card slot - the Marsboy supports MP3, WMA, WAV, APE and FLAC. Removable memory card support is not at all a given on cheap Bluetooth speakers.

There's also an option that allows you to pair two Marsboy Bluetooth speakers to create surround sound from your iPhone or iPad – which is handy, as the Orb isn't the loudest Bluetooth speaker we've ever heard. While audio isn't of the crystal clear variety you'd find in true audiophile equipment – and neither would you expect it to be at this price – the Marsboy was able to handle everything we threw at it, from rock to pop and everything in between. For the money, you certainly can't complain about the performance. And with a built-in 3000mAh battery, you should see around 12 hours of battery life on a single charge.

## Cowin Ark

**Price: £149.99**

The Cowin Ark is unlike many other Bluetooth speakers as its formed of two parts; a portable Bluetooth speaker/soundbar that sits on top, nicknamed Cruze, and the wired base, nicknamed Ark. The mixture of brushed metal sides and a mirror finish on top means that the Cowin Ark demands attention – if you're looking for a Bluetooth speaker system that'll be 'invisible' in its surroundings, the Ark isn't the best option for you.

Though the Cowin Ark comes as a two-piece Bluetooth speaker system, the Cruze can be taken to the beach or the park and be used by itself, thanks to its built-in rechargeable battery. The Ark features Magnatec technology, which syncs the two parts of your system ready for playback, while



also keeping the Cruze securely attached to the Ark whenever its placed on top – but that's not its only functionality. The Magnatec technology also provides wireless charging for the soundbar, which means the Cruze is fully charged and ready to go whenever you are. Oh, and the Ark can also be used to charge up your smartphone too, if it supports wireless charging.

We were really surprised by the audio quality of the Cowin Ark, especially with regards to its bass output. The levels of bass are nothing short of phenomenal and when paired with a soundbar that can produce 35W of room-filling audio, the result is a well rounded sound perfect for a variety of tasks, from background audio when you're relaxing to playing tunes full blast in your living room with your mates. This is thanks to its two speaker drivers, two passive radiators and a 5in ported subwoofer.

## Edifier Bric Connect

**Price: £65 on Amazon**

The sophisticated design of the Edifier Bric Connect is suited more to the home than outdoors in our opinion, especially with no kind of water, dust or shock resistance provided with the speaker. It certainly isn't on a par with the likes of the UE Roll in terms of its indestructibility, but with this being said, it'll suit many users both at home and away – as long as you don't plan on going swimming with it!

Unlike many other Bluetooth speakers, the Bric Connect offers two ways to power the speaker, one suited for home and one suited for the outdoors. The first option is to plug the speaker directly into the mains, which is ideal for those of us that want



to use the Bric Connect as a stationary Bluetooth speaker within the home. But what happens when you want to venture out with the Bric Connect? The good news is that the speaker can also be powered via batteries, but not the lithium-ion rechargeable ones that you're probably expecting. Instead, the Bric Connect requires six AA batteries to power the speaker wherever a plug isn't available.

The Bric Connect produces well rounded, room filling audio that we think is well above the Bric Connect's £65 price tag. The main cause of shock was the levels of bass produced by the speaker (thanks to its bass reflect port at the rear), as we'd only heard a similar level of bass produced by two-piece systems. It doesn't drown out the mid range either, which is an issue we've experienced with Bluetooth speakers in the past. Vocals sound rich, and the speaker performs as well playing acoustic music as it does playing Dubstep.

### Cambridge Audio Bluetone

**Price: £199.95**

The Bluetone's matte black casing isn't much to look at, but it packs a serious punch for speaker



costing just under £200. With 100W output, the Bluetone is powerful enough to really fill a room with sound, and provides a more solid bass sound than many compact speakers of this size. It measures 182x354x118mm and weighs 4.1kg so isn't quite as portable as some of the other speakers in this round-up. It only runs off mains power, but there's a carrying handle built into the back of the speaker and it's light enough to easily carry from room to room at home.

It uses Bluetooth for wireless connectivity – with the option of Apt-X for devices that support it – and there are two inputs for non-wireless devices as well.

## Denon Envaya Mini

**Price: £99.**

The Denon Envaya Mini is a gorgeous little Bluetooth speaker ready for use with your iPhone, iPad or Mac. It measures in at just 20.9x5.4x5.1cm, but it weighs a surprisingly hefty 558g, which makes it a little less portable than we'd like.





But where this speaker really excels is the audio, so there's a bit of good news for you. It boasts dual 40mm full range drivers with a 40x83mm passive radiator, which produces both crisp sound and impressive bass.

### Maxell MXSP-BT03

**Price: £44.99**

This petite portable speaker from Maxell will appeal to those who value style, ease of use and true portability above audio quality. It's by no means a bad little speaker set for your iPhone or iPad. It comes in a variety of colours including



white, blue and black. Weighing just 278g and just 154x59x46mm in size, it's well put together and should survive most tumbles thanks to its durable build. It's a 6W output wireless speaker set with two cones and no subwoofer so don't expect amazing audio quality, but for its affordability and portability it's a price some will be willing to pay.

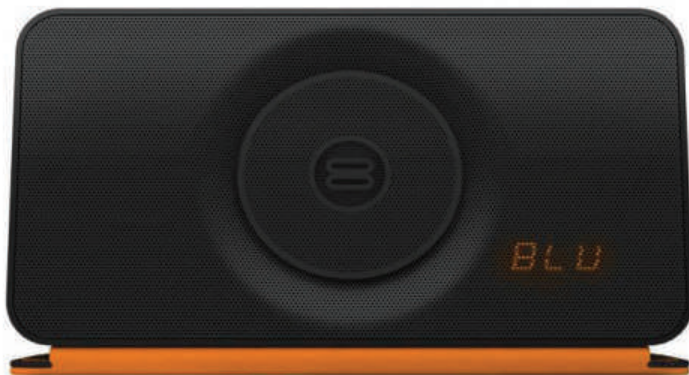
There's Bluetooth 4.0 or you can plug in via the 3.5mm cable, and it's loud enough to fill a room. There's a built-in DC 6V 12000mAh rechargeable Li-ion battery, too.

## Bayan Audio SoundBook Go

**Price: £62.99**

Third in the series, the Bayan Audio SoundBook GO is a Bluetooth portable speaker worth reading about. It's an affordable little speaker that bucks the trend for many of its Bluetooth breed by being a delight to listen to. Plus, it's a neat design that provides some protection to the front perforated grille if you should travel with it.

Inside the SoundBook Go is a pair of 35mm full-range drivers powered by a 7.5 watt stereo



Class D chip amplifier. You'll get reliable Bluetooth connection or the option of a 3.5mm minijack for improved sound performance.

## Scosche BoomBOTTLE

**Price: £119**

The Scosche BoomBOTTLE is a portable speaker ideal for those who enjoy the outdoors. As the name suggests, it's designed in the shape of a drinks bottle, which is actually designed to fit in the bottle holder on your bike. It's able to pair with an iPhone or iPad via Bluetooth, USB or 3.5mm jack.

Using the BoomBOTTLE in your bike's bottle holder is not exactly ideal, but thankfully it's not limited to just that. It lends itself to other outdoor situations and it's robust, too. The cylindrical speaker shape means it offers omni-directional sound, provided by two 3W 40mm speakers.

Plus, it weighs a surprisingly light 443g and is 70mm across and 205mm long.





## Pure Jongo S3X

**Price: £129.99**

Pure's Jongo speakers have been really popular, and the company recently added the portable S3X model to the range. Admittedly, the S3X is a little heavier than many of its portable rivals – at 1.25kg it weighs almost as much as the 13in MacBook Air – but its rechargeable battery lasts for up to 15 hours and its 20W output is powerful enough to get things going at an outdoor party or BBQ.

The S3X includes both Wi-Fi and Bluetooth for streaming your music. And, like all the other Jongo models, the S3X can be used on its own, paired with another Jongo for two-channel stereo, or as part of a multi-room system that beams music all around your home.

## Bowers & Wilkins A7

**Price: £699.99**

The Zeppelin from Bowers & Wilkins was one of the first speakers to support Apple's AirPlay, but



the company has released a number of other AirPlay speakers since then and the A7 is its current flagship model. The £699 price tag is pretty steep, but the A7 can earn its keep, with five separate drivers – including a proper sub-woofer – that provide terrific clarity and detail, along with a good, firm bass sound. And with 100W total output the A7 can fill a small hall with sound, let alone your front room at home. There's no Bluetooth but, as you'd expect, the A7 supports AirPlay for your iOS devices, and provides both Wi-Fi and Ethernet for connecting to your home network.

### Creative Roar

**Price: £129.99**

It's a while since we've heard from Creative, but its Roar speaker deserves to get your attention. It's a relatively compact speaker, about the size of a thick paperback, and finished off with a smart metallic grille. However, Creative's engineers have managed



to cram in five separate drivers and two amps, including a proper sub-woofer that gives it a nice firm kick in the bass.

Creative doesn't quote a figure for the amp output, but it really does create a big sound for such a small speaker system. It's a little heavy at 1.1kg, but the sound quality, eight-hour battery, and extras such as a microphone for voice calls make the Roar one of the best portable speakers we've seen in this price range. There's Bluetooth, 3.5mm line-in, Micro-USB and a microSD slot to boot.

## Jabra Solemate Max

**Price: £249.99**

The rugged design and attractive sound of the original Solemate speaker earned it a lot of fans, so Jabra recently followed it up with the larger Solemate Max.

Admittedly, a weight of almost 3kg means that you probably won't be carrying the Solemate Max around in your backpack, but it does have its own carrying handle to help you out, and the extra size



and weight means that it can include a big battery that lasts for up to 14 hours.

It produces a big sound too – the bass could be a bit stronger, but its 90W output is powerful enough to get the party going when you're on holiday or out in the garden. The £250 price tag is a bit steep, but it's dust, dirt and water-resistant, so it'll earn its keep if you need a speaker system that can cope with the British weather.

## Monster Superstar

**Price: £99.99**

Most speakers of this size sacrifice sound quality for portability, but the modestly named SuperStar claims to be the 'world's smallest audiophile' speaker.

It really is a pocket-sized little speaker, measuring just 48mm thick and 206mm long. However, it's splash-resistant and sturdy enough to cope with life on the move. The sound quality, inevitably, isn't up to true audiophile standard, but the bass radiator gives it a firmer sound than many of its ultra-compact rivals. It kicks out a decent volume too – noisier rock



and dance music can distort a bit at high volume, but it'll still do the trick for listening to a few tunes when you're out and about with your friends.

## i-Box Max

**Price: £124.99**

It's not as portable as its little brother, the Trax, but the Max makes up for it with really good sound quality and a competitive price. The Max measures almost a foot long and weighs about 2kg, so it's a





bit big and heavy for a backpack. However, it's light enough to carry around indoors or to take out into the garden, and big enough to pack a decent punch as well. The 30W output won't have the roof rattling, but it's more than loud enough for listening to music in your bedroom, or for a dinner party or BBQ, and the inclusion of a bass radiator lends it a firmer, fuller sound than you normally get from mid-size speakers such as this.

### iClever IC-BTS02

**Price: £22.99**

iClever's Bluetooth Wireless Speaker is one of the best cheap Bluetooth speakers we've tried. It looks great and it's affordable. It's surprising just how much sound emanates from this tiny zinc-alloy box. Given that you can easily fit the 64.5x64.5x70.1mm 261g iClever in a single hand, the 5W speaker hidden inside does a much better job than we should reasonably expect from such a portable speaker, both good on bass and free from distortion at high volume. **Lewis Painter**





## Opinion: Apple TV won't revolutionise gaming

Games are just a small part of its overall appeal

**B**y the time Apple began its event on Wednesday, we already knew most of the basics: leaks had soured the surprise of the iPhone 6s and 6s Plus, the iPad Pro, and certainly the long-awaited Apple TV refresh. However, one pre-show rumour didn't come true, which left some people disappointed: The new set-top box isn't a gaming powerhouse.

It plays games, certainly. The addition of the App Store means that the new Apple TV is designed to

run big-screen games, with Apple demonstrating a multiplayer version of Crossy Road, a new Rayman, and a rhythmic, family-oriented sports game from Rock Band maker Harmonix. And with the touchpad remote, iOS devices, gamepads, and other peripherals all supported, there's some versatility to what developers can do with it.

But the idea that the Apple TV could challenge the Xbox One or PlayStation 4 in any serious way seemed off-base, and Apple's brief presentation didn't inspire belief that gaming will be a tent pole focus for the device. Does that make it a "major bust," as gaming site Kotaku said? Well, no: there's still plenty of upside to the Apple TV's gaming capabilities, even if rumors undercut the impact.

### What it is (and isn't)

The Apple TV is not a £350 to £400 console packed with high-end gaming guts; it's a tiny, £129 box with an iPhone 6 processor in it. And it's not designed to run the kinds of £50 games that are built by hundreds of people and showcase the latest in graphics technology. In fact, many of the games you'll play probably started life on the iPhone, and most will be free-to-play offerings.

In truth, the new Apple TV is quite similar in capabilities to a few other boxes on the market. Amazon's Fire TV, for example, is all about media and games, while Android TV-powered boxes (like the Nexus Player) can likewise run apps, games, and more. Ouya is perhaps the most high-profile failure of the bunch, as it Kickstarted millions of dollars, built up a lot of hype, and then botched the landing. We probably needn't worry about a messy launch

with the Apple TV. There's an incredible selection of iPhone and iPad games on the App Store that can be tweaked and revised for tvOS, and both the company and platform are a known quantity by now. Also, Apple sold more than 25 million of the boxes when it was just a "hobby" for the company – imagine what might happen now that Apple thinks it's important.

That said, the gaming capabilities of the Apple TV aren't strong or central enough to be a big selling point. Apple realizes that, which is why games got a few minutes in the middle of the TV demo. It's part of the overall appeal of the new box, but not the hook. But that's the same deal with the iPhone and iPad – you buy these devices for apps, communication, media, and more, and you also happen to gain access to a vast array of great games along the way.

In that sense, the Apple TV is the perfect complementary gaming device for an avid iPhone or iPad owner. The ability to buy or download a game on your touch device and also have it available on your TV (assuming the developer has made it Apple TV-compatible) is a wonderful perk, particularly with the ability to pick up a saved game on any device. And with iPhones and iPads used as secondary controllers for Apple TV, it makes the box that much more compelling.

## Stumbling blocks

Granted, control is a possible point of contention with the Apple TV. The bundled Siri Remote is interesting – it's like the halfway point between a laptop trackpad and a Wii Remote, letting you tap and swipe for basic interactions, as well as tilt



SteelSeries Nimbus

and move with the built-in motion controls. That means easily steering your sports car in *Asphalt 8: Airborne*, or maybe swinging the remote like a bat or golf club – and whichever other examples seemed new and interesting when the Wii hit in 2006. But between the small touchpad and the lack of gaming-specific buttons, the Siri Remote isn't going to work well for all types of games. In some cases, your iPhone or iPad might be an able substitute, although developers will have to contend with the fact that a (likely small) number of Apple TV owners won't also have an iOS device.

Because there's no traditional gamepad included with the box, advanced gaming will be limited to those who seek out additional peripherals. Apple isn't even making its own controller for the TV; that'll be left up to third-party makers through the MFi program. SteelSeries is first up with the Nimbus, which looks like a cheaper version of its Stratus XL iOS controller and also

works with iPhones and iPads. There's another limitation in play: it appears that apps and games are limited to 200MB of storage apiece. That may not be a problem for many casual games, but high-performance titles may need to turn to the cloud to house their data – or grab chunks as needed for progression. But it also means developers may need to condense or compress assets, which isn't going to make games look any better on your 50in flat screen.

## And still...

Despite those potential complications, I see a lot of value to gaming on the Apple TV. It's ideal for existing iOS device owners, and playing games on a box directly connected to your TV is a lot easier than using AirPlay streaming or one of those awkward HDMI connectors from years back.

The Apple TV could be a great living room console for family and party multiplayer experiences, such as a trivia game like *You Don't Know Jack*. Get a few friends with iOS devices, crowd them around the TV, and you've got easy, instant fun. The Siri Remote has a built-in microphone, so why not bust out some karaoke party games, for that matter?

It's also encouraging to see developers embracing the option to bring grander console experiences to Apple TV. You'll be able to play this fall's *Guitar Hero Live* on the device with the same plastic guitar peripheral – but no need for a dedicated gaming console. And popular toys-to-life games *Skylanders Supercharged* and *Disney Infinity 3.0: Star Wars* will both launch starter kits for Apple TV, as well.

As far as smaller games go, I'm not sure that every game will thrive in the living room setting. I'd rather play Crossy Road on my phone and be right there in the tense tapping action, rather than several feet away from a TV. It reminds me of buying mobile gem Threes! on Xbox One last year – I'd played hours and hours on iPhone, so I paid £3.99 to grab the console version and only played for a few minutes total. It just didn't click with me the same way.

But bigger, deeper games will make a lot of sense on Apple TV. Apple featured Transistor prominently during the demo, and it's one of the games that will really benefit from the grander experience of playing on a TV. Same with Bastion, XCOM: Enemy Within, The Walking Dead, and Star Wars: Knights of the Old Republic.

While all work well on an iPad, those are the kinds of games I want to play on a big screen while slumped on the couch at the end of the day. And since Apple TV games can require a full gamepad (unlike iOS games with MFi controllers), the console experience can be recreated without compromise. And what about retro games that started on a controller before moving to touch? Sonic the Hedgehog will be a lot sweeter on your TV when you don't have to dig out a dusty old Sega Genesis.

No, the Apple TV probably won't stop anyone from shelling out for an Xbox, nor will the option of television play likely kill your iPhone gaming habits. But the option for living room play within Apple's mobile ecosystem is a huge perk of the new set-top box, and another reason why it seems like a seriously entertaining upgrade. **Andrew Hayward**



## Opinion: Questioning Apple's battery case

Why now? Why the bulge? Is it an Apple product?

“What’s with that Apple battery pack?” If you’re the resident Apple know-it-all in your family/office/school, you probably heard this question more than once this week. It’s an appropriate one to ask when the biggest company in the world dropped one of its strangest releases: a battery case with a weird hump that promises to extend the life of your iPhone 6 or 6s by 25 hours. I won’t say it’s awkward, but had it been released by a company like Griffin or even Mophie, it would have a hard



time finding someone to sit with in the cafeteria. But since it's Apple, the whole world noticed. The timing of the release was curious in itself – on a random Tuesday, just 17 days before Christmas – but even if it had been unveiled alongside the iPhone 6s in September, it would have been no less of an oddity. It might be the most un-Apple product ever released, and I have to wonder if Jony Ive even saw it before it was sent to production.

And each time I was posed the above question, I struggled to answer it.

### Worst case scenario

When the first image of Apple's battery case popped up in my Twitter timeline, I scrolled right past it. It wasn't until I saw the same image up three or four more times in near succession when I realized it wasn't someone's joke mock-up.

Now Apple hasn't exactly had a stellar record when it comes to cases. There were the funky iPhone 5c covers that showed unsightly bits of words through the holes. The iPhone 4 bumpers that were more about reception than protection. And who can forget the utterly bizarre iPod Socks? But something troubled me about the battery case even more than the design. It's not just that it's cumbersome and goofy; rather, it seems to be trying to address a specific customer complaint with the iPhone 6.

Of course, you can argue that the iPhone 6 itself is an answer to specific complaint about the size of the screen compared to its Android foes, but the battery case feels different. When Apple designed the iPhone 6, it was a natural progression and

design evolution. Every decision – the size of the battery, the protrusion of the camera, the placement of the power button – was made to create the best product, warts and all.

The battery case doesn't look like it went through the same process. It's as if Tim Cook or Phil Schiller read a bunch of disparaging iPhone posts and called a meeting. And that's not how Apple operates.

## Losing focus

There's no way to know whether Steve Jobs would have signed off on Apple's first battery case, but we do know that he despised knee-jerk products: "It's really hard to design products by focus groups. A

lot of times, people don't know what they want until you show it to them."

But if there was ever a focus group product, it's this one. While there's still some cool innovations inside that make it smarter than the average battery case – the Lightning connection is a nice addition and the live status updates are particularly clever – without the Apple symbol on the back it would never be mistaken for a Cupertino product. And at £79, I can't imagine it's going to fly off shelves.

The iPhone battery case is a solution to a problem, but I just don't think it's one Apple strongly believes needs solving. People have been comparing it to the Magic Mouse's charging port or the Apple Pencil's



built-in Lightning charger, but those are design compromises made for style and convenience. The Apple Pencil might look funny sticking out the end of the iPad Pro, but the care and detail put into its design is obvious. With the battery case, not so much.

### Cause and effect

Apple doesn't need to create reactionary products. It has an army of third-party partners that are happy to fill specific needs that arise as people discover things that Apple chose to overlook. Some smarts aside, the iPhone battery case doesn't really offer much that the Mophie Juice Pack doesn't, and it's hard to understand its reason for existing, other than the occasional upsell to an unscrupulous iPhone 6 or 6s buyer at an Apple Store.

Of course, this could all just be an overreaction. A £79 accessory is basically a rounding error on Apple's bottom line, and after a few weeks it'll just blend into the others on the shelf at the Apple Store. By the time the iPhone 7 comes around we'll probably forget it ever existed.

It's no secret that Apple does its best work when it's giving its customers products they want, not what they want in a product, and I hope this isn't a sign of a shifting philosophy. The Apple I love builds products on its own terms. It doesn't respond to squeaky wheels with a generous application of grease. **Michael Simon**





## Opinion: Apple should ditch 3.5mm headphone jack

Why using Lightning instead isn't as crazy as it sounds

**S**top me if you've heard this one: Apple releases a new product that forgoes a standard piece of legacy technology. We read all about how said product is going to fail and how we can't possibly live without whatever it is that got left off. Millions of people buy one anyway, unaware or unaffected by the change, and the rest of the industry comes around to Apple's way of thinking.

So when I read the rumour that Apple is exploring an iPhone that ditched the 3.5mm headphone jack,

I barely batted an eye. Even if it turns out to not be true with regards to the iPhone 7, it's a move that is inevitable at some point in the iPhone's evolution. The universal port has been a function of every audio device since the earliest days of the Sony Walkman, and it has to irk Jony Ive to still be forced to include one decades after the Walkman popularized it.

But contrary to popular belief, I don't think the decision to remove the port will be for design reasons or out of a rabid desire to make the iPhone as thin as possible. As many have already pointed out, the iPod touch is already thinner than the iPhone, headphone jack and all. Rather, when Apple moves to dump the standard audio jack from the iPhone it will be in the name of progress, and like so many seemingly foolish decisions before it, we'll be all the better for it.

## Serial killer

Everyone remembers the iMac for putting the first nail in the floppy disk's coffin, but that wasn't the only technology it put on the road to oblivion. From our own first look at it: "Most dramatically, this new consumer offering has no SCSI port, no standard serial ports, and no ADB ports. Apple has opted to replace these familiar connections with USB, a high-speed serial architecture that has suffered from slow adoption on the Wintel platform despite its technical advantages. Currently, no USB devices exist for the Mac."

In 1998, USB was still in its infancy, and Apple took a huge risk by making it the sole connector on the iMac, a decision even bolder than featuring



The iMac was fine without legacy ports, and the iPhone will be too

USB-C as the new MacBook's only port. The iMac was Apple's last gasp, and had USB not taken off, it might have been the end. But we know how that story ended. USB devices exploded and it quickly became the standard input port on towers and laptops everywhere. Stragglers aside, it didn't take more than a few years before serial and ADB were distant memories.

Removing the headphone jack from the iPhone is a similar proposition. With the iMac, Apple was betting that a nascent yet clearly superior technology was on the verge of taking off; by removing the 3.5mm jack from its biggest-selling mobile product, Apple is relying on Lightning and Bluetooth to facilitate the transition. But this time

around, Apple is holding a much stronger hand – with an ace up its sleeve.

### Power cord

Most people don't know it, but Apple has already added a specification to its Made For iPhone/iPod/iPad program to allow headphones to connect directly to the Lightning port. In many ways they're superior to their 3.5mm counterparts, offering lossless digital audio and enabling advanced features such as noise cancellation and digital-to-analogue conversion without the use of batteries.

But much like USB in 1998, there are limited options for music lovers. The first ones to market – notably the Philips Fidelio M2L and JBL's upcoming Reflect Aware earbuds – are relatively expensive with minimal audio benefits. And of course, they only work with iOS devices, giving manufacturers little reason to invest in the technology, especially when there's a 3.5mm audio jack right next to it. Removing that port would certainly accelerate the proliferation of Lightning-enabled headphones, but even though Apple sells more iPhones than any other handset, the percentage of people using one is still relatively small, especially when compared to the number of mobile devices with an audio jack. And since Apple is unlikely to license the tech to the likes of Samsung and Huawei, it will probably be a while before major headphone manufacturers jump on board.

Presumably Apple will bundle a pair of Lightning earbuds, but beyond that, true Lightning headphones will likely be relegated to the 'pro' crowd, with higher-end models taking advantage of the advanced features to target audiophiles on the

go. And for those who own headphones they can't bear to part with, there will surely be a dongle Apple will be happy to sell them.

## Unplugged

A line of Lightning headphones is interesting, but I'm much more interested in what Apple can do without wires. The white cord hanging out of the top of our iPods might have been cool back in the clickwheel days, but that's not the case anymore.

Bluetooth headphones are the future Apple is betting on, and I can envision a campaign that spins the elimination of the headphone jack in a positive light, especially if the iPhone contains something like aptX or a homegrown codec to bolster the sound delivered to your ears. Bluetooth audio has yet to reach its potential, and a headphone jack-less iPhone might be just the push it needs.

Besides, Apple's not about to add a second Lightning port to the iPhone, so the removable of the 3.5mm audio jack creates a problem MacBook users will be familiar with: With a single port responsible for everything, you won't be able to use your wired headphones and charge your phone at the same time. Apple may indeed be working on a breakthrough in wireless charging for the next iPhone, but let's face it, wired headphone wearers will probably get short shrift here, forced to buy a clunky adaptor or juggle between charging and listening.

## Made for iPhone

Whether we're talking about wired or wireless, however, Apple is in a unique position of strength



when it comes to headphones. It's not just that it makes the most popular smartphone in the universe – it also happens to own one of the most popular headphone companies. And I suspect Apple is hard at work on the next generation of Beats' Solo and PowerBeats lines to help make the transition that much smoother.

The Lightning earbuds that Apple includes will be good enough for a lot of people, but it could also have a whole line of Beats headphones ready for all those millions of launch-day sales. There's any number of ways it could entice buyers – bundles, BTO, Apple Music discounts, even trade-ins – and since Apple Stores already offer a financing



The first Beats headphones after Apple's acquisition: Solo 2, which combines wired and wireless connectivity

plan with the iPhone Upgrade Program, it would practically be an impulse buy; a \$200 pair of Bluetooth headphones would cost less than \$10 a month spread out over two years.

I wouldn't be surprised if this one of the reasons it bought Beats in the first place. Removing a port that's been standard on every mobile audio device for the past three decades is not a decision Apple is going to take lightly, and it's undoubtedly one Tim Cook and Jony Ive have been ruminating on for some time. A line of Beats headphones made exclusively for the iPhone, with matching colours and an Apple Pencil-style quick-charging port, would all but eliminate the type of growing pains the iMac experienced all those years ago.

## Take the lead

No matter when the iPhone loses the headphone jack, it's going to cause an uproar. Any time Apple chooses to dump an old piece of tech, whether it's the optical drive or the 30-pin connector, people are invariably left with outdated equipment, but when you start messing with people's music, it gets personal.

But the transition needn't be so painful. Sure, there will be incompatibility and lost dongles to contend with, but with Beats in its back pocket, Apple can at least mitigate some of the shock. And by severing the dependency on the ancient 3.5mm jack, it could spur other headphone makers to bring some real innovation to mobile audio.

Because there's no point in fighting it. Sooner or later, we'll all come around to Apple's way of thinking. **Michael Simon**



## Predictions for 2016

Why 2016 is set to be an exciting year for Apple fans

**W**ow. What a year 2015 was for Apple. The 12in MacBook, the iPad Pro, Apple Pay, Apple Music, Beats 1 and, of course, the Apple Watch, have given us plenty to talk about over the past 12 months – and these releases do more than just hint at what might be coming up in 2016.

### Apple Watch

Apple hasn't exactly bet the farm on its Watch. It was launched with appropriate fanfare, but the company's played it slow and sure since then. In store display areas are discreet, and overshadowed by its longer-established lines. Perhaps it realises that a fair few of us are waiting for the first revision.

Expect that to come in 2016 – around April, when the original model will be 12 months old. If anything appears between now and then it's likely to be another big-brand collaboration, like the one it rolled out with Hermes back in September. Jumping in bed with a sports brand like Nike – with whom Apple has worked before – would be a logical fit, and give Watch Sport more weight in the fitness arena.

The first revision will almost certainly be an extensive upgrade to bring it in line with its most ambitious competitors, so we're expecting an Apple Watch 2, rather than an iPhone-style 'S' variant. We're also expecting it to be an entirely stand-alone device, along the lines of Samsung's Gear S2, which connects directly to the cellular network, bypassing the Galaxy Phone entirely.

This might seem illogical if you considered the Apple Watch to be a stealth marketing tool for increased iPhone sales, but it wouldn't be the first time Apple has broken an explicit link between two core products to boost the sales of the newcomer. Think back to its original strategy with the iPod, which was to use it as a Trojan for the Mac (it required a FireWire-enabled computer running iTunes which, at that time, wasn't available on Windows). Only when it produced a PC version did the iPod really fly, and change the company's fortunes forever.

Why do we believe it's going to do that here? Aside from the need to compete with Samsung it's because watchOS 2, which rolled out on 21 September, made it possible for the first time to run third-party applications directly, without using the phone as a data conduit. Building in

full-blown phone-free comms is the next logical step.

This will require some additional components – in particular a SIM card and associated circuitry – but advances made in the past 12 months suggest that shouldn't be a problem. The S1 processor in the current Apple Watch is built using the same 28-nanometer process as the chip in the iPhone 5s, which was current while Apple was closing Watch's development cycle. Since then, we've seen both the iPhone 6 and iPhone 6s hit the shelves, and they use a considerably finer process, with their A9 processors built using a 14-nanometer process. Assuming Apple develops a new chip – likely called the S2 – for its second-generation Watch, it's reasonable to assume that it will employ the same 14-nanometer process and, rather than slimming the wearable, use the reclaimed space to bolster its built-in features.

Other notable omissions from Apple Watch that could be addressed in the first revision are native GPS, additional health sensors and a higher capacity battery, not necessarily to deliver a longer work time, but to deal with the additional load of the bolstered range of sensors and comms.



## iPhone 7

We've already had an 'S' model since the last full update, so expect 2016's iPhone 7 to be a more

extensive revamp. Pundits are forecasting the death of the home button, which we don't think many would mourn. Adopting soft buttons, as are common on Android devices, makes sense, and it would allow Apple to increase the screen size without bulking up the physical body. Conversely, it may reclaim the lost space to produce a smaller device with the same 16:9 aspect screen as it employed in the iPhone 5, 5s and 5c to tempt an upgrade out of anyone who was put off by the iPhone 6 and 6s's wider, taller bodies.

It would still need to accommodate a fingerprint reader, which is key to Apple Pay, but there's no reason why this couldn't be moved to the side of the case or sited by the earpiece, on the opposite side to the front-mounted camera.

Building the iPhone 7 around an AMOLED screen – as used in the Apple Watch – would make sense on several fronts, as it's less power hungry than the LCD technology Apple currently uses, can display more colours and is more responsive, but it seems unlikely that Apple will roll it into the iPhone any time soon. Analyst Ming-Chi Kuo of KGI Securities, believes the company will persevere with LCD for several years, and with Apple suppliers building new LCD factories in China to satisfy future demand, it looks like he could well be right.

## Apple TV

Apple's television product – once famously dubbed a hobby by Steve Jobs – has just undergone its most ambitious revamp in years. For UK users, the big news of 2016 is likely to be the appearance of BBC iPlayer on the platform. The Corporation has already

confirmed its plans to extend its existing browser-based service to the Apple box, where it will join Sky, which has been on the service for some time.

When should you expect it? Sooner rather than later, unless licensing negotiations with rights-holders hold things up. Bournemouth-based developers Matt Cheetham and Phillip Caudell have already proved how easy it should be by developing their own take on the app, called Auntie Player, the code for which they've released on Github.

Sadly, though, that could be it as far as the UK's free-to-air broadcasters are concerned, unless any other unofficial ports appear online. The BBC reported in October that ITV had no plans to appear on Apple TV (just as it initially didn't appear on either Sky or Freeview), while the intentions of Channels 4 and 5 were 'unknown'.



## Mac processor updates

Despite Apple's adventures into processor design it's unlikely we'll see its own chips rolled out in its desktop and laptop machines unless it can make them fully compatible with the current Intel line-up. Wonderful though it would be to run iOS apps alongside OS X software, Apple would need to give developers several years' notice to update their applications to run on any new architecture, so expect to still be buying Intel-driven machines throughout the next 12 months, as the new Skylake processor line takes over from existing chips from spring.

## Mac Pro

The Mac Pro is due a refresh, as it's now over two years since the current barrel design first appeared. We don't anticipate any external remodelling, but references within the El Capitan code suggest a new machine could be in the works, which would enable Apple to benefit from the last two years of processor advances, perhaps integrating Skylake here, too, so that its complete line-up is running on the same core hardware from end to end.

## MacBook Air

Rumours suggest that new 13in and 15in MacBook Air models are in the pipeline, with the 11in MacBook Air being discontinued. The launch is expected around WWDC in June 2016.

These new MacBook Air models are said to be thinner and lighter, with internal spec enhancements including new batteries, cooling modules, and chassis, as well as USB Type-C – especially now



that Intel has integrated Thunderbolt 3 into USB-C. The next-generation MacBook Air is also likely to feature Intel Skylake processors, and may feature a Retina display.

## 12in MacBook

Apple launched its incredibly thin and light 12in MacBook back in March, so with just a few months to go until the MacBook's first birthday, we're expecting a refresh to the line-up in 2016.

Rumours are thin on the ground right now, but speculation suggests that the 2016 MacBook will be released either at a special event in March or in June at WWDC 2016. It'll probably still have an Intel 14nm Core M Chip but it could have a lower price tag.



## Force Touch Keyboard

A Force Touch keyboard could be in the works, too – as a supplement to the Magic Trackpad 2 – if a recent patent filing is anything to go by. The switchless design would allow Apple to produce even thinner MacBooks, and also to take into account the force with which a key is pressed, which will be a boon for anyone making music on their Mac. In the opposite direction it should allow for haptic feedback, which could possibly be used to signify to vision-impaired users that they're correctly striking a particular key.

## OS X

Expect to see a new edition of OS X (version 10.12) shipping in autumn (after a summer preview at WWDC). We know it's going to happen not only because Apple has switched to annual OS refreshes, but because it's already showing up in server logs – suggesting that it's up and running on Apple's campus machines while the coders apply their finishing touches. It's currently identifying itself as 'Fuji' but we wouldn't be surprised to see this switched out for another Yellowstone hillock before shipping. Interestingly, as well as being a volcano, thus fitting with the Yosemite / El Capitan theme, Fuji is also the name of a cultivated Apple.

## Apple Pay, Apple Music

Alongside these headline developments, there will be a whole series of speed bumps along the way as Apple extends and refines its offering. Apple Pay will be accepted in a wider range of headline stores, and the Apple Music – which is now available

on Android – will inevitably expand.

More importantly, Apple Music may prove to be the one thing that keeps the iPod on the shelves next year. If you'd asked us what we thought of its chances at the close of 2014,



we'd have said 'slim', but 2015 saw Apple deliver the first proper update to the iPod touch in three years, and it's now providing another entry ramp for the firm's £9.99 a month music subscription service. That alone means it makes sense to give it at least 12 months to prove itself. The same can't necessarily be said of the nano and shuffle, which are each available in just one configuration and, without streaming abilities, offer no ongoing revenue source.

### But don't expect...

The Apple Car, which is almost certainly going to happen, just not in 2016. Apple is said to have 1000 developers working on the so-called Project Titan, and to have set up various different front companies, including Faraday Futures and Sixty Eight Research. We'd love to see it on the roads in 2017, but industry chatter suggests 2020 is a more likely date. If they're right, it might not be worth holding back on an interim upgrade to your existing run-around next year. And if you were hoping for an actual television set from Apple it's time to give up on that idea too. **Nik Rawlinson**



## Best Apple TV games

You'll be glued to the screen with these great games

The new Apple TV is more than just a 'hobby', it's now a fully-fledged television system complete with apps, and even more importantly, games. Now the Apple TV is available online and in store, you're be able to play games using the Siri Remote or an MFi (Made For iOS) controller.

All this is set to turn the Apple TV into one of the best video games consoles on the market. While it's tempting to think of the Apple TV as a games machine for casual and non-traditional gamers – the sort of device that Nintendo specialises in – the quality of gaming on the iPad and iPhone has risen tremendously in recent years. And with the new A9X processor and Metal software, you shouldn't underestimate the power of the new Apple TV.

It's worth noting that Apple hasn't included a way to link directly to Apple TV apps, so you'll have to open the Apple TV App Store and manually search for the app you want to download.

## Guitar Hero: Live

This, for us at least, the best game available at the moment for the Apple TV, complete with the guitar accessory we all love. Guitar Hero: Live has had a facelift when compared to older games – in career mode, the CGI-based gameplay is gone and has been replaced by live video which changes depending on how well (or badly) you're doing. If you're hitting every note perfectly then the crowd and your band mates will respond positively, cheering and dancing – but if you start to miss notes and loose your combo, the crowd will respond accordingly by not dancing and becoming increasingly hostile with their jeers. Your band mates start to give you evil looks, too.

Unlike with older Guitar Hero games, the colour-based system has been replaced by something simpler - though it may seem more complicated at first. Whereas before you'd have to strum whenever a red, green, yellow and so on, marker was on screen, Guitar Hero: Live features only black and



white keys, with three black keys and three white keys directly above them. This makes it more difficult as you really have to pay attention to whether you're hitting the top or bottom buttons, but once you get used to it, it's a great system to have.

You've also got an online multiplayer mode, with a difference. Instead of going head-to-head with a specific person, you choose from two channels playing (usually very different) genres of music and play along with everybody worldwide instead. Your scores are displayed in real time along the side of the screen, to provide visual feedback on your progress. This gives you more competition, which is always exciting – especially when you're in first place. The best part is that Guitar Hero: Live isn't just for the Apple TV – it's for the iPad and iPhone too. Those of you thinking it might be awkward to play with the guitar when using an iPhone display are correct, which is why the company also provide you with a touch-based version of the game for smaller screens.

## Skylanders Superchargers

Skylanders Superchargers is primarily a game for the younger generation, however we found ourselves playing it for slightly longer than we'd care to admit to. The gameplay is simple and addictive, with an easy to follow storyline – Skylands is in peril due to Kaos unleashing the 'Doomstation of Ultimate Doomstruction', and the 'SuperChargers' have been assembled to pilot some very interesting vehicles. The Skylanders Superchargers starter pack includes a land vehicle and two characters, which are placed on a portal when used in-game. It's a fun experience



placing the characters and vehicles on the platform and watching them be instantly recognised on screen, and one that kids will enjoy.

The aim of the game is to fly, drive and dive through the various levels with land, sea and sky-based vehicles. You're able to complete the main storyline using only the land vehicle, but to complete the game in its entirety will require you to purchase additional vehicles. Don't fret – the vehicles and characters can be bought digitally instead of having to go out and find them yourselves, though having the physical models is pretty fun.

As well as getting a hold of the various types of vehicle, you're also able to upgrade and customise each. The various options available have different effects on your vehicle – some will increase top speed, while others will increase control, and so on, and while this may seem excessive, you should customise your car based on the mission ahead'.

## Canabalt

Canabalt is a hugely popular iOS game, similar to platformers like Ski Safari and Alto's Adventure, except with this game you aren't skiing – you're running away from the robot apocalypse (of course). The gameplay is simple, lightly tapping the Siri remote touchpad to jump from building to building, avoiding plummeting to your death. It's essentially the same game as its' iOS counterpart, but the big screen and loud music means it's a more intense experience than when played on your iPhone.

## Peg Ballet

Peg Ballet is a painfully simple game that'll take minutes to learn, but hours to master. The aim of the Apple TV original game is to collect pegs in the fastest time possible, by clicking your Apple TV remote to 'jump'. If that doesn't sound like your cup of tea, you can also compete with up to eight friends in real time – and if you're thinking that you don't have enough remotes for eight friends to play, you'll be happy to know that players can download a free iPhone companion app that'll allow friends to join at a moments notice.

## Beach Buggy Racing

Beach Buggy Racing isn't a new app per say, but it really comes to life when played on the Apple TV – especially when used with a controller. When used with a controller, you no longer feel like you're playing an Apple TV game, instead you feel like you're playing a full-blown console game (with the only giveaway being graphics). Beach Buggy Racing is reminiscent of Mario Kart, with a variety





of themed cars and drivers all with special abilities, and power ups available throughout each race to keep things interesting.

Upgrading your car and battling through various collections of races should keep you entertained until your tokens run out, at which point you have to wait, or pay for more – one of the downsides to a completely free app. Although with this being said, for £3.99 you can get rid of the adverts and token system, and play for as long as you desire.

### SketchParty TV

SketchParty TV is a great app for the Apple TV, reminiscent of the hugely popular Pictionary, and was recently named one of the “15 greatest party games” by Apple. The game is a fairly standard drawing and guessing game, where one person is given a word and using an iPhone or iPad, has to draw the word for their friends to guess. It’s a great

game to play when with a group, as the app allows you to team up and go head-to-head with friends. Fun fact - SketchParty TV was the original Apple TV game, which launched back in 2012, utilising AirPlay functionality via an iPhone or iPad in lieu of an official Apple TV app.

Developer Matt Braun has reassured us that SketchParty TV is a universal app (you buy it once and it's available for all platforms) so if you buy it for your iPhone or iPad here, it should appear on your Apple TV.

## Lumino City

The hugely popular puzzler for iOS devices has made its Apple TV debut. Lumino City features hand-crafted levels made from paper, which showcases a unique visual style on the big screen that's unique to this game. The gameplay itself is rather slow paced so if you're looking for a game where you run through attacking enemies, this isn't for you, but with this being said it does become more addictive the more you play.

## Sing! Karaoke

The problem is sometimes you find an app you want to play with, and that stops you from writing the article you were supposed to be writing... For us this was Sing! Karaoke. It works with or without the iPhone app, the latter gives you a microphone and allows the creation of playlists. We were slightly put off by the idea that there were other people playing the game that the app seemed to want us to team up with, but we didn't seem to have any issues there in the end. There's a nice selection of

new and old songs, and we were worried that we'd have to pay for in app purchases, but we've not discovered any yet.

### Disney Infinity 3.0

Disney Infinity fans, rejoice! The full Disney Infinity 3.0 console experience is now also available on the Apple TV. Although the third installation of the Disney Infinity series is free to download from the app store, gamers have to first buy a special Apple TV starter pack, similar to those offered to console gamers. The set includes Anakin Skywalker and Ahsoka Tano figurines, as well as a new MFi controller for the Apple TV and a wireless Disney Infinity 3.0 Bluetooth base – everything you need to sink your teeth into the Disney-themed action-adventure sandbox.



## Jetpack Joyride

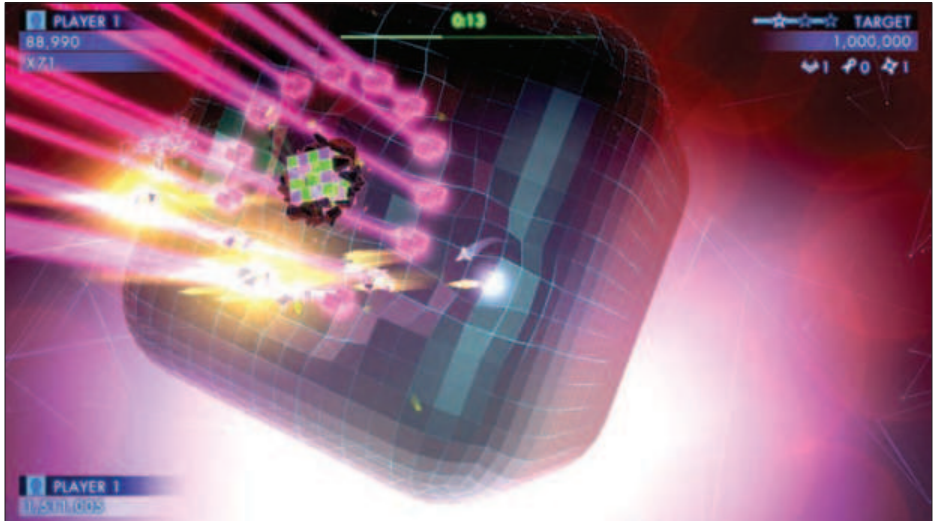
Halfbrick Studio's hugely popular fly-and-dodge game has made its way to the Apple TV, jetpacks and missiles included. Jetpack Joy is an endless scroller where the player has to avoid oncoming obstacles like missiles and lasers, while collecting coins to upgrade your jetpack and power-ups. Though the concept is simple, the game is hugely addictive and thanks to its upgrade system, you'll be a jetpack master in no time. Oh, and you're able to fly a DeLorean in its current release, too.

## Alto's Adventure

Alto's Adventure is a serene skiing game, with similar mechanics to the hugely popular iOS game, Tiny Wings. Controlled by the Siri remote, the game requires the user to navigate the skier down the mountain while avoiding dangerous obstacles like rocks and cliffs, while trying your best to collect coins and power-ups scattered throughout the course. The graphics are understated yet gorgeous, and thanks to its never-ending nature, you'll lose hours playing this game. The best part is that if you have the iOS app on your iPhone or iPad, your progress will automatically sync thanks to iCloud support.

## Geometry Wars 3

Geometry Wars 3: Dimensions Evolved is a hugely popular shooter available not only for iOS devices, but has also made its PS4 and Xbox One debut. The company now adds "Apple TV" to that list as the game is now available for download, bringing its fantastically detailed and vibrant gameplay to the



Apple TV. Players fire at the AI-driven enemies while evading them by moving around a spherical board and collecting power-ups.

The shape of the board changes often, with each one bringing its own set of challenges to the table, and can be controlled either via the Siri remote or your smartphone.

## Oceanhorn

Oceanhorn is, essentially, the closest thing to Legend of Zelda you'll find without buying a Nintendo system. Though for copyright reasons this is a different game set in a different location to Zelda, you can certainly notice the developers' hat-tip to Zelda in gameplay. There are many quests to take part in, with a fairly lengthy storyline and although the graphics aren't quite there, you still get the console feel when playing the game – quite an achievement for an Apple TV app.

## Galaxy On Fire

This feels to us like the key launch for the Apple TV. Galaxy On Fire has long been one of the most visually impressive games for iPhone and iPad, and Manticore Rising should look fantastic on the Apple TV. This game is a prequel to Galaxy on Fire 3: Manticore, which will be released later in the year. Visually it looks spectacular, and should push the A9X and Metal to its limits.

The gameplay is fast paced – which is a downside when using the Siri remote, as its motion-controlled nature doesn't allow for quick reactions. We imagined that gameplay would be more enjoyable with an MFi controller, but after connecting the controller we found that Manticore Rising doesn't feature MFi support, much to our disappointment.

## Rayman Adventures

Rayman Adventures is one of the best platform games ever created, and it's great to see it on the Apple TV. While it's nothing new for platformer fans, it does show that the Apple TV has first-rate games. (And visually spectacular ones at that.)

## Asphalt 8

Few people are aware that the Siri Remote has Accelerometer and Gyroscopic functionality. While this isn't quite the same as the Nintendo Wii remote, it will be great for playing racing games (already a style suited to iOS devices).

Asphalt 8 is one of the best racing games on iOS, and we're looking forward to it hitting the Apple TV. Turn the Siri Remote on its side and rotate it left to right to simulate a steering wheel.

## Afterpulse

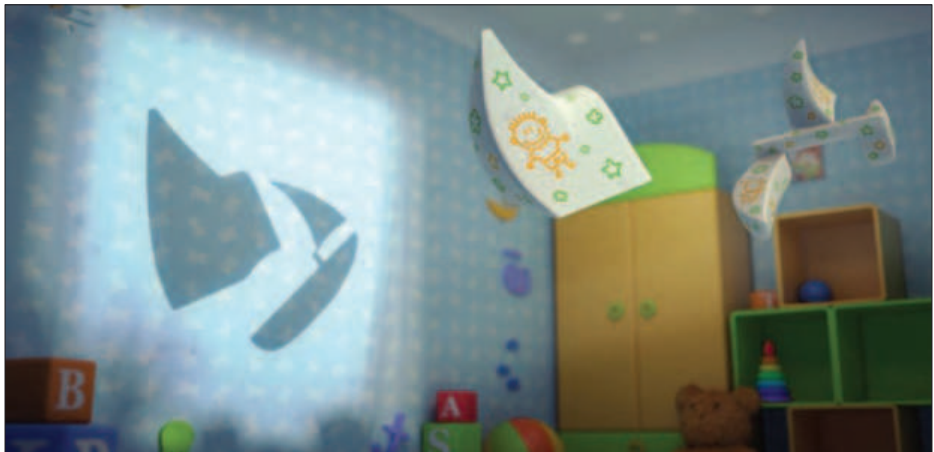
This highly rated first-person shooter is a popular iPhone and iPad game coming to Apple TV. We think it'll be a great choice for testing out how well an MFi controller and an Apple TV stack up against a more traditional console. The graphics are extremely good, and it's built with 64-bit and Metal in mind.

## Crossy Road

Crossy Road took centre stage at Apple's September event (where the new Apple TV was revealed). We like this quirky action game for iOS and think it'll work well with the Siri Remote. The multiplayer functionality looked interesting too, and we think it'll be great fun to play.

## Shadowmatic

Shadowmatic is a quirky puzzler where you rotate objects to create shadows on a wall. You have to match the shadow to the pattern you are given to progress. It's a nice use of touch to create the kind



of game that doesn't work with a traditional control pad. While it may be a little sedate for some, we think it'll be a great way to wind down.

## Beat Sports

Thanks to the accelerometer in the Siri Remote, you can use it in a similar fashion to the Wii U controller. One of the best games to make use of this is Beat Sports, a game that mixes cartoon sports with music. It could be the game that the family gets round the TV to play.

## Transistor

This is a sci-fi-themed action RPG from Supergiant Games (the people who made Bastion). You control a red-haired female with a giant sword battling through a futuristic city.

Transistor is a very highly rated game on PC consoles. While it's a hack-and-slash arcade game, there is a story to it, and you do spend a lot of time levelling up and getting new equipment and upgrades. It looks set to be a very addictive game.







## 20 tips for your iPhone

The 20 best iPhone tricks you didn't know existed

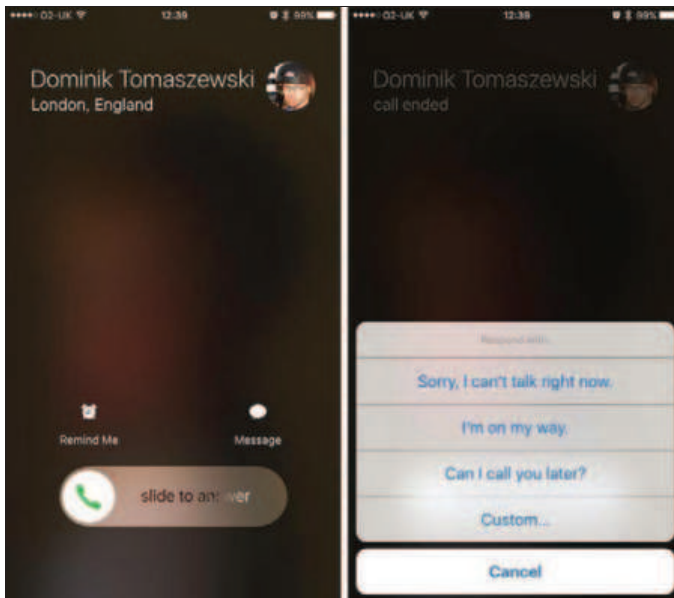
**T**he iPhone is an impressive tool with hundreds of brilliant features, but there are several hidden features and tricks that you may not have realised existed – until now. Here, we've picked our favourite iPhone tips and tricks that can help you achieve things quicker and easier, and you'll wish you'd known about them a long time ago.

## 1. Create custom iMessage replies for calls you can't answer

Sometimes it's not the right time for a phone call; and while you could just let calls you don't want to take go to voicemail, sometimes you want to explain why you're not picking up. iOS let you quickly respond to a call with a text message.

Depending on which version of iOS you're running, you either swipe upward on the phone icon that appears next to the unlock slider and choose Respond With Text, or tap the button labelled Message above the Slide To Answer slider.

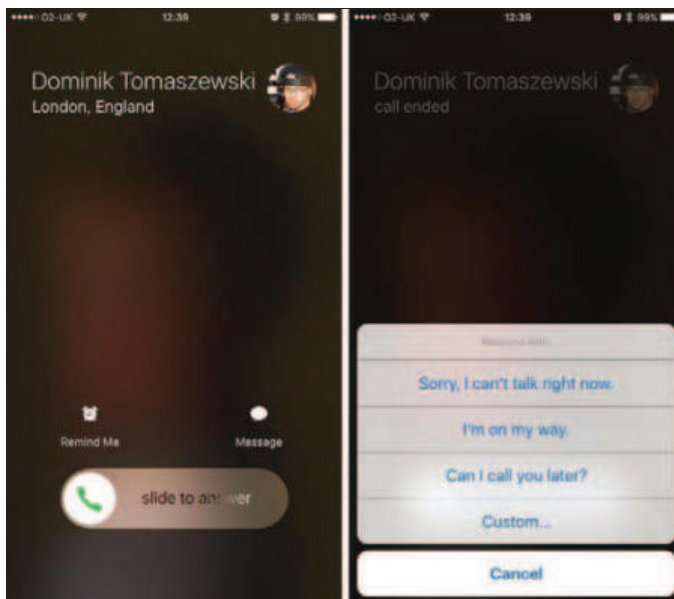
By default, you'll get three pre-written options ("Sorry, I can't talk right now", "I'm on my way" and "Can I call you later?"), along with a button that lets you enter text there and then. However, you can customise the prepared messages under Settings



> Phone > Respond With Text. You can't have more than three, however: if you want to add a new one, you'll have to sacrifice one of the current options. Tap the one you're willing to lose and type in the new response.

## 2. Skip calls with Remind Me Later

Alternatively, you can get iOS to remind you to call back later. As with the auto-replies, the way you do this depends on your version of iOS: in iOS 9 you tap the Remind Me button above the slide, but in earlier versions you swiped upwards and selected Remind Me Later. You can choose to be reminded in an hour, 'When I Leave' or 'When I Get Home'. Make sure your address details are up to date in Contacts, so your iPhone knows where home is. The timings will be based on your GPS movements.





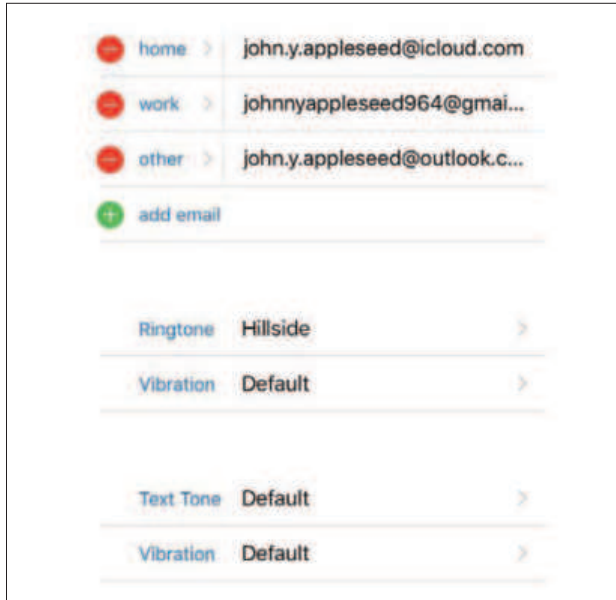
### 3. Create custom ringtones and alert tones in iTunes or GarageBand

You can create ringtones for your iPhone based on any music track in your iTunes library. We looked at this in depth here (the tutorial includes a video to walk you through the process), but to sum up: create a short, sub-30-second duplicate version of the track; convert the file type of this track from .m4a to .m4r; re-import the track to iTunes as a ringtone; sync the ringtone with your iPhone.

Better still, you can create unique custom iPhone ringtones from your own audio creations, and this is especially user-friendly if you do the creative work on the iPhone itself. Create a 30-second track in GarageBand; go to the Share options and choose Ringtone; then assign it to a contact or notification.

### 4. Set custom vibrations on your iPhone

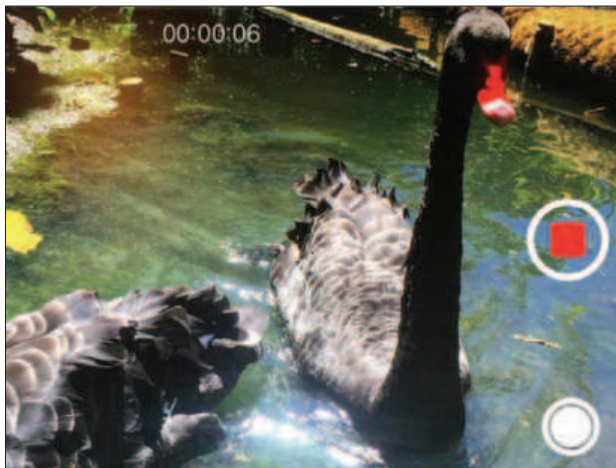
Want to know who's calling you without taking your phone out of your pocket? That's easy - assign a



ringtone to a contact. But what about doing it all silently? Not only can you assign a custom ringtone or text tone to a contact, you can even give them a custom vibration pattern.

Open Phone or Contacts; select a contact, then tap the Edit button in the top-right corner. Scroll down to find the ringtone field; below it is a vibration field. Tap that, and you'll see an assortment of built-in vibration patterns you can choose from. Further down, though, is the ability to add a custom pattern: tap Create New Vibration, and you can tap on the screen to create your own rhythm. When you're satisfied (tap the Play button to see what it will feel like), tap Save to set the pattern.

If that's not enough, you'll need to go back to the contact and also assign a custom vibration pattern for text messages.



## 5. Take photos while shooting videos

You're using your iPhone to film a magical moment, and you wish you could snap a photo at the same time. Don't stop recording! Just tap the camera button, which appears on-screen in addition to the shutter button as you film.

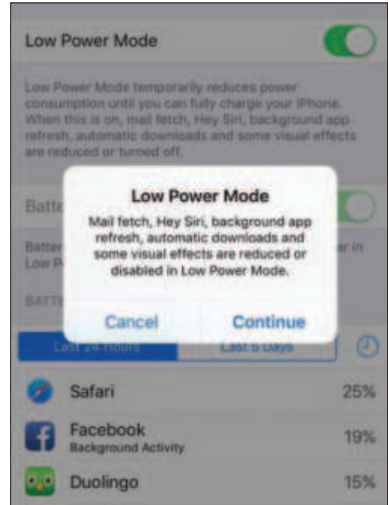
You aren't using the iPhone's true photo sensor; you're getting the slightly less impressive video sensors instead, but the photos should still turn out pretty nicely.

## 6. Save battery with Low Power Mode

If you know you're going to be using an iPhone for a long time, then switch to Low Power Mode by tapping Settings > Battery > Low Power Mode.

Low Power mode reduces consumption by turning off a number of iPhone features. Mail fetches less frequently (push is turned off), Hey Siri is turned off, background app refresh is turned off and some visual effects are reduced. The screen goes

dark after a shorter period of inactivity. You may not notice the difference (although you may not get a vital Mail or Social Media message unless you check for it). On the whole, though, the iPhone works as normal and the battery will last for much longer.



## 7. Save PDF to iBooks

You can turn web pages into PDFs and add them directly to your iBooks app. This is handy if you're reading a long web document, or especially if you've found a HTML book online and want to keep a copy of it. When you tap Share, scroll across the apps to find Save PDF to iBooks. Tap it and the web page will be converted and added to your book collection.



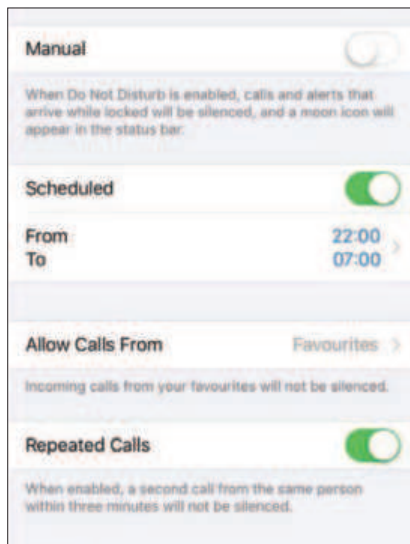
## 8. Set up Do Not Disturb mode

Are you using the Do Not Disturb feature? It's perfect for insulating you from distractions where you're trying to work, or get some sleep.

Do Not Disturb can be activated from the Control Centre; swipe upwards from the Home screen (or from within apps, if you've allowed that feature) and tap the crescent moon icon in the top row of options. A matching moon icon will then appear in the top bar of your iPhone screen. (Can we take a moment to appreciate how elegantly this top icon 'waxes' and 'wanes' when switched on and off?)

With Do Not Disturb activated, incoming calls and alerts will be silenced.

This is the simple, manual method for activating Do Not Disturb, but we can get more sophisticated than that. Go to Settings > Do Not Disturb (in the second bank of options), and you'll see a range of options, including the ability (under the label Scheduled) to set 'quiet hours' each day or night.



## 9. ...unless it's an emergency

Do Not Disturb is very handy, but you might worry that it's preventing an urgent message from getting through. But you can set up exceptions for peace of mind.

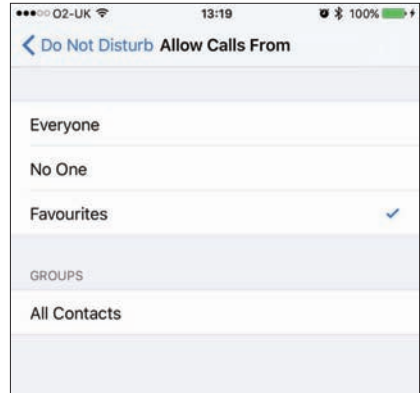
Switch Repeated Calls to ON and you'll be alerted to a second call from the same person within three minutes. You may get the odd trivial call breaking through, but most midnight callers get the hint if their



victim doesn't pick up first time. Someone with urgent news would be far more likely to try again.

You can also specify exceptions for certain people. Tap 'Allow Calls From' to allow this to be overridden by calls from Favourites.

(You can add people to the Favourites list in the Contacts app. Select a contact, scroll down to the bottom of their listing and tap Add to Favourites. But removing a contact, or changing the order in which Favourites appear in 3D Touch sub-menus and the like, can only be performed from the Phone app - select the Favourites tab along the bottom and tap Edit at the top of the next screen.)



## 10. Quickly add symbols

You've probably been using your iPhone's keyboard for ages without realising that it's actually easier than you thought to add symbols to your messages.

Instead of tapping once on the 123 button, once on your chosen symbol and then once again on the ABC button to go back to the conventional keyboard layout, you can do the whole thing in one gesture.

Tap and hold the 123 button, slide your finger to select the symbol you want to insert, then release. Once it's been added, your keyboard will automatically revert back to the letters keyboard. One tap instead of three: that's some serious time savings right there.

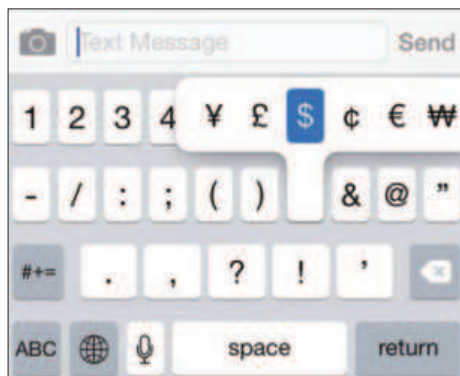


Oh, and while we're talking symbols: hold your finger on the symbol for a second or two and you'll see any alternative (usually related) symbols that the button can offer instead. The dollar key also offers pound, euro and yen symbols, for example.

There are many additional symbols hidden within your keyboard that you may never have discovered.

## 11. Double-space for full stop

This one might sound simple but it's a tremendous time saver that a surprising number of iPhone owners still don't know about. Instead of going to



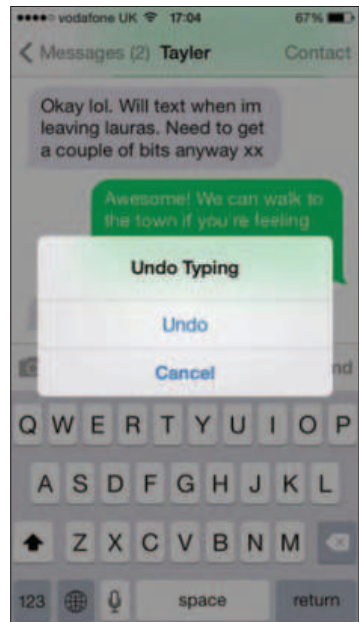
the symbol menu to find a full stop at the end of a sentence, you can just double-tap the space button. It'll add a full stop to the end of the word you've just typed, then a space, and then set you up ready to begin the next sentence with a capital.

(You don't have to do this particularly rapidly, but if you leave a lengthy pause between the spaces this doesn't work – iOS grudgingly accepting that you do want to type two consecutive spaces like some kind of grammatical barbarian.)

## 12. Shake to undo

This one can be a little awkward at times but it can be a bit of a life saver. If you've just typed a long sentence and accidentally deleted it, or made some other catastrophic error, you can give your iPhone a shake to bring up the undo/redo dialogue box. Just make sure you're holding on to your iPhone tightly before you shake it.

Since implementing this feature Apple has added an undo button to the system keyboard, thankfully, but this only appears when the iPhone is in landscape mode. If you can't be bothered to type like that, get shaking.



## 13. Tap to top

Just scrolled down a really long list in Notes, or worked your weary way through a ton of

emails? Instead of laboriously scrolling back to the top, you can jump there immediately by tapping at the very top of the iPhone's screen. We'd rank this tip with the double-space full stop: it's reasonably widely known, but for everyone else it's a game-changer.

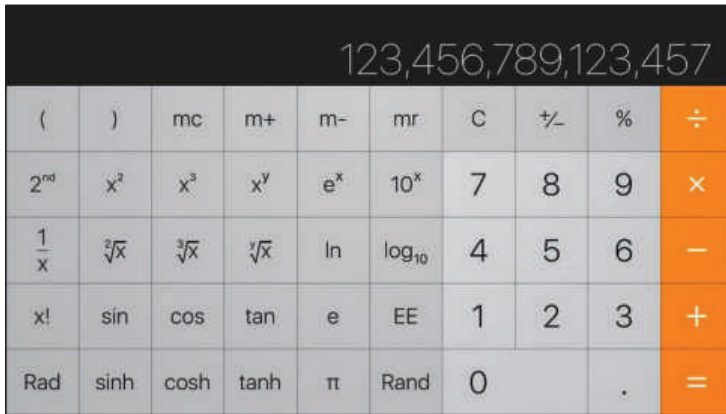
And it's not just Notes and Mail; tap to top works in most iPhone apps. (It doesn't work in the ESPNcricinfo app, we've noticed, but that app offers a little upward arrow icon that does the same thing. If tap to top isn't working, check for some equivalent function.)

Some apps, cleverly, offer an undo on this function, just in case you tap it by accident and lose your place in a long article. The excellent Instapaper pops up a Return to Position command, for instance – and if the menu bars have disappeared you have to tap the top of the screen twice to activate the feature in the first place. Experiment to see if the app you're using offers some other variation on or evolution of this handy feature.

## 14. Quick-delete in the Calculator app

If you use the calculator app a lot, you might like this handy and little-known time-saving trick. The Calculator app, like real-world calculators, doesn't have a delete button, which can be annoying if you've just typed out a long number and made





a mistake right at the end. Fortunately you can swipe across the number in the black area at the top – left or right, it doesn't matter – and for each swipe, a single digit will be removed from the end of the figure.

## 15. Stop music with a timer

This is a cool trick for those of you who enjoy falling asleep to music. The problem with that is it'll still be playing when you wake up in the morning, and you've probably just drained most of your battery in the process. Using the hidden 'Stop Playing' timer, you can choose how long you want the music to play for as you drift off to sleep.

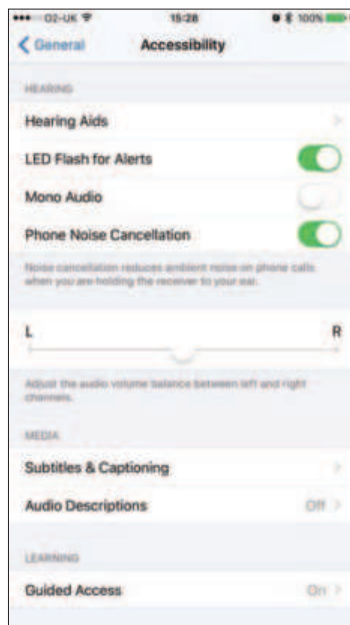
To set up the timer, go to the clock app and then tap 'Timer' in the bottom right of the screen. (You can access this from Control Centre: swipe up from the bottom of the Home screen and tap the stylised clock face on the bottom row.) Choose how long you want your timer to last for and then tap 'When Timer Ends'. Scroll down to the bottom of the menu and select 'Stop Playing'.

Press start on the timer and then begin playing your music from the Music app. When the timer ends, the music will fade to a stop. This trick will also work for audiobooks and other media.

## 16. Get your iPhone's flash to blink when you get a message

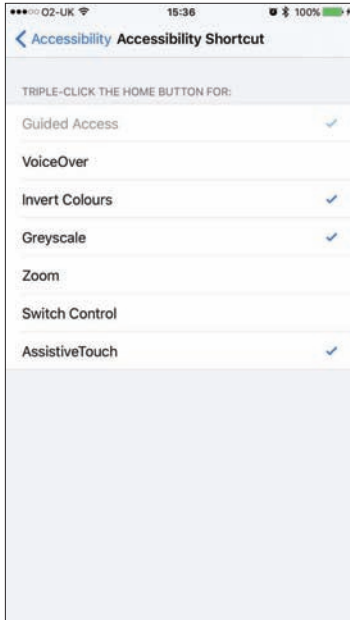
If you find that the vibration or sound that your phone makes when you get a message is not always enough to attract your attention, there's another element that you can add to the alert: light. By going to Settings > General > Accessibility and scrolling down to the 'Hearing' section (this feature is designed for people with hearing impairments), you can turn on 'LED Flash for Alerts'.

Now every time you get a notification, the flash next to your iPhone's rear-facing camera will blink.



## 17. Triple-click Accessibility shortcuts

Another accessibility setting that could come in handy is the Accessibility Shortcut, which can be found by going to Settings > General > Accessibility and then scrolling right down to the bottom. Tap 'Accessibility Shortcut', and you'll see a menu of options. Ticking selected features in this list allows you to activate them easily by triple-clicking the Home button. You can invert the colours of your



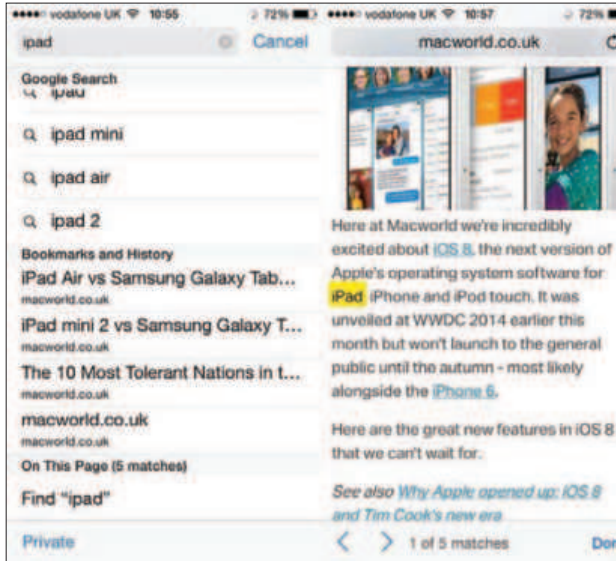
iPhone for better visibility in low-light, zoom in to tricky-to-see parts of the screen and more.

(If you've selected more than one accessibility feature to be accessible via triple-click, a dialogue box will pop up and ask which one you want – it doesn't apply them en masse.)

## 18. Find words or phrases on a web page

If you're looking for a particular word or phrase on a web page, you can find it by typing the word or phrase in the URL/search bar at the top of the screen. (As soon as you tap on the top bar the page you were on will be replaced by a screen filled with your Favourites, but don't worry – you're still on the web page. It'll return as soon as you tap off the top bar or run the in-page search.) You'll see a list of web search results – and search results from the App Store, Wikipedia and so on if applicable, but you need to look at the bottom of that list for a section labelled "On This Page", with the number of matches.

Tap it, and you'll see that the results are highlighted on that particular web page in yellow.

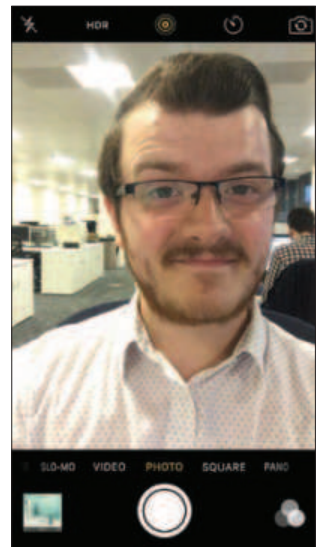


Tap the arrows at the bottom of the screen to go to the next instance.

## 19. Use your headphones to take a selfie

Selfies continue to be all the rage, as we're sure you've noticed, but if the quality of your selfies is a concern, try this handy trick.

A decent proportion of iPhone owners know that you can activate the camera shutter by pressing one of the volume buttons (volume up or volume down – doesn't matter which) instead of the onscreen button. This tends to produce less camera shake. But a still better option for selfies – and one that is far less widely known

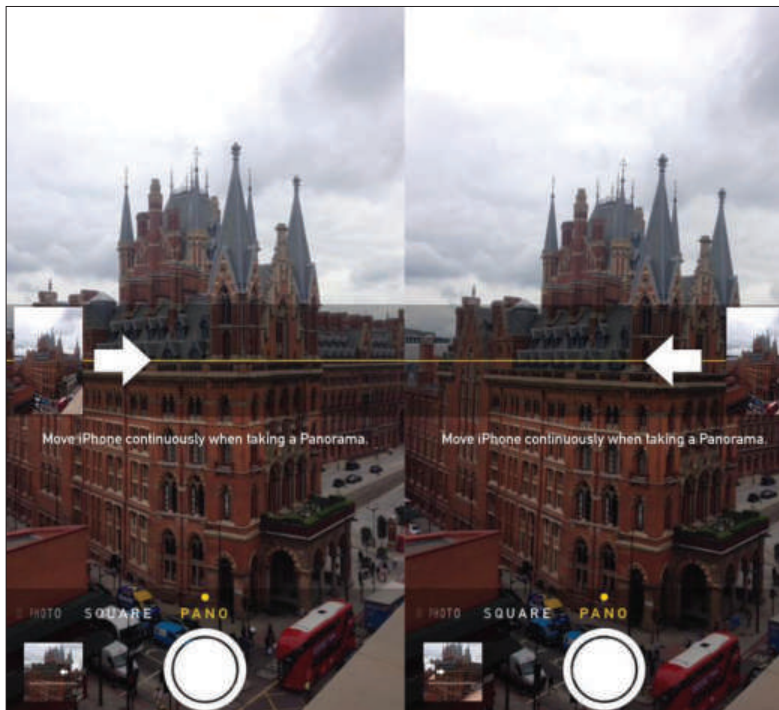




– is to use the volume button on an attached pair of headphones. When the camera app is open on your iPhone, you can use the volume button on an attached pair of headphones to take a photo. Not only does this reduce shake even more than using the iPhone's volume button, but it also means you can take a more natural-looking photo from further away or take a photo hands-free.

## 20. Switch direction in Panorama mode

You can change the direction of your Panorama photograph in the Camera app by tapping the arrow that appears in the middle of the screen in the Panorama mode.





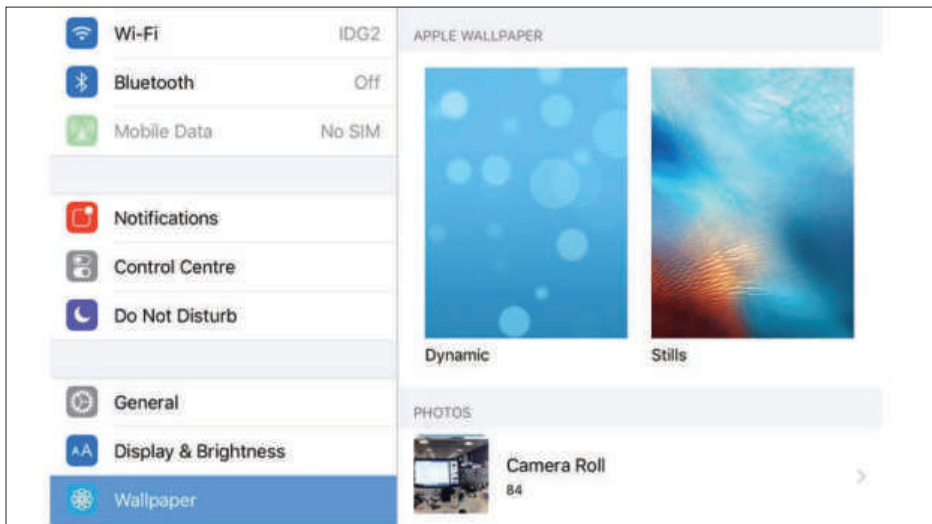
# 40 tricks for your iPad

Get more from your iPad with our top iPad tips

Since the iPad launched back in 2010, it has been the go-to choice for millions of consumers around the world. Like with any product, you have to know the ins and outs to get the most of the iPad – and here, we list 40 of our top tips for using your iPad. The tips range from beginners tips to tips that even masters of iOS were unaware of. Either way, we feel confident that at least some of the iPad tips and tricks we'll be revealing will be new to you will be helpful.

## 1. Change the wallpaper on your iPad

You can (of course) easily change the wallpaper of your iPad, both on the lock screen and home screen. Simply head to Settings, tap 'Wallpaper' and then tap

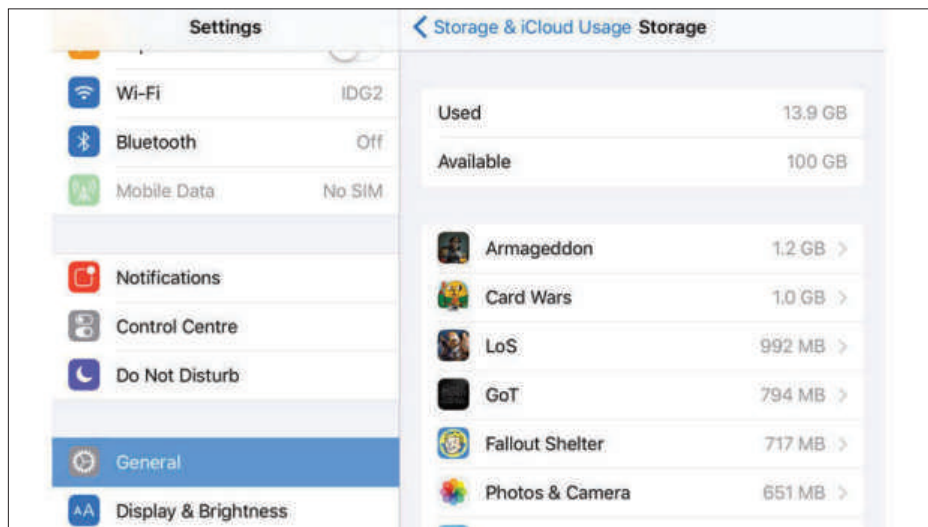


‘Choose a New Wallpaper’. You can browse from a selection of Apple’s own wallpapers, with ‘Dynamic’ wallpapers moving slowly in the background, or browse for a photo from your photo library.

Once you’ve found the wallpaper you’d like to use, tap it to bring up a lock screen wallpaper preview. From here, you can preview what your wallpaper will look like, along with specifying whether you want to set it as a universal wallpaper, or if you want it specifically for the lock screen or home screen.

## 2. Manage storage on your iPad

Maybe your iPad won’t let you snap another image. Perhaps it refuses to let you download one more app. Because iOS storage space isn’t expandable, it’s important to monitor what’s gobbling up the available gigabytes on your device. Here’s how. Go to General > Storage & iCloud Usage > Manage



Storage in Settings, and wait for a moment or three as iOS calculates which apps are using the most space internally and in iCloud.

Often, Music and Photos & Camera are the two biggest offenders. If you use a service like Apple Music or Spotify, you can safely delete the Music cache on your device to free up space. If you back up photos and videos to your PC or Mac, you can delete them, too.

Elsewhere on the list, you'll see the apps you use, sorted with the most storage-intensive ones at the top. If apps that you rarely use take up a lot of space, tap on them in the list, then tap Delete App to remove them in an instant.

### **3. How to set up location-based reminders for specific locations**

If you want to be reminded to do something when you leave your home, work, current location, or any address in your address book, that's pretty easy to get with iOS's Reminders app. But what if you want to remember to buy something when you're at the shops? You probably don't want to add their locations in your address book just to get that feature. Fortunately, you don't have to. When you create a reminder, tap it and turn on Remind Me at a Location. By default, Reminders will populate your current address – tap that and you'll get a host of options, including, at the bottom, a text box to enter a custom address.

### **4. Get your iPad to read to you**

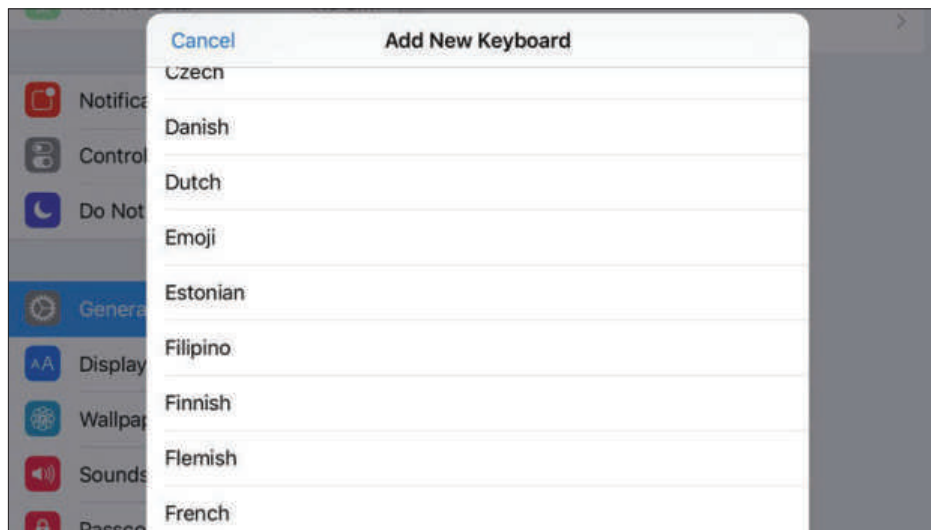
Enabling the Speak option makes it possible for your iPad to read aloud any selectable text. Go to

Settings > General > Accessibility. Scroll down to Speak Selection, and tap to turn it on. You can also adjust the speaking rate, choose from a wide variety of voices and highlight words as they are spoken.

Now, go into any app that lets you highlight text. Your options include Mail, as well as Safari, Notes and a fair few others. Select some text, and you'll see a new option appear in the contextual menu (you may have to tap the right arrow to view more options). Tap the Speak command, and your iOS device will start reading the text aloud.

## 5. Enable the Emoji keyboard on your iPad

The Emoji keyboard lets you insert all kinds of fun images wherever you can type, including the recent additions of tacos, unicorns and the middle finger. Your iOS device can speak the names of those symbols, too. Perhaps you've seen these iconographic symbols in emails, iMessages and



tweets, and wondered how on earth people managed to type them. Maybe you've mistakenly assumed that you need to purchase a third-party app to gain access to those special symbols.

You don't: Apple treats those symbols, called Emoji, as an international keyboard. Go to Settings > General > International > Keyboards. Then tap Add New Keyboard and find Emoji. Now open an app where you can type some text.

Next to the spacebar, you'll see a little globe icon. Tap it to switch between your normal keyboard and the Emoji one.

## 6. Multi-task on an iPad

Now, this tip only applies to those using fairly recent iPads – and by recent, we mean iPad mini 2 or later, iPad Air or later and, of course, the iPad Pro. The multi-tasking features are split into three groups; slide over, split view and picture-in-picture. All iPads mentioned can use slide over, which brings up a small side pane (using 1/3 of the screen) displaying an iPhone-esque app, alongside the first. You can then change the app by swiping from the top of the app, and selecting a new one. The only downside is that you can't interact with both apps at the same time, and if you want to use the app you originally had open, you have to close the 'slide over' app first.

Split view is more impressive, but is limited to the iPad Air 2, iPad mini 4 and iPad Pro. When using slide over, applicable users can 'pull' the app into a split screen mode where both apps can be used at the same time, and the amount of space can be adjusted by tapping and holding the divider between the apps.

Finally, 'Picture-in-picture' mode allows recent iPad users to watch videos or FaceTime people while using other apps. When in a FaceTime call, or watching a movie (not just in Videos – some third-party apps are supported) simply tap the home button and the video will be minimised and displayed in the bottom corner of your iPad. Feel free to drag it to the other corners of the iPad if needed, and pinching the video will expand it.

## 7. Tap to top

You won't believe how much time this will save you. If you're halfway down a web page in Safari, tap the top bar to jump back to the top of the page. Try it in other apps too - lots of them, third-party apps included, use this navigational trick.

## 8. Take photos with volume

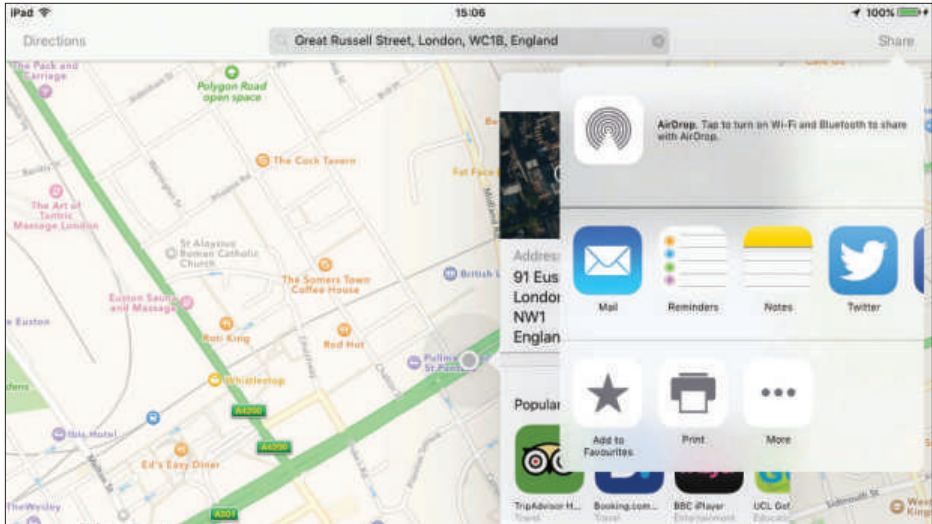
Did you know you can take photos using either of the volume buttons? Their location is much more convenient when shooting in landscape mode, especially when using an iPad.

## 9. How to share your current location

With iOS, it's easy to let loved ones know where you are at any given time – and this can be achieved in a number of ways. First of all, you can open Maps, tap a pin (or your current location marker), tap the arrow, and finally tap the Share button. You can then choose where to share your location to, with options including Messages, as well as Facebook and Twitter (which we wouldn't recommend).

Of course, that method becomes irrelevant if you want constant location information. For that, you





have to open Find my Friends and invite the person you want to share your location with, by entering their Apple ID when prompted. Once accepted, they'll be able to see your location whenever they desire – unless you disable Location Services.

## 10. Download a track from Apple Music

Apple Music users can stream music from the internet to their mobiles wherever there's signal – but what about when you're on the tube or on a plane with no connection? Thankfully, you can download any individual track from the streaming service onto your iOS device – just tap the menu button displayed next to each song in the 'My Music' tab and tap "Make available offline".

## 11. How to pull-to-refresh

To check for new emails within the Mail app, simply navigate to a mailbox view or the Mailboxes screen

(you can't force a refresh while viewing a message) then swipe the screen downward until you see a little refresh button (the one with the circular arrow) at the top. Keep swiping until that button stretches down and then 'snaps back' to a progress indicator.

## 12. Delete recent addresses

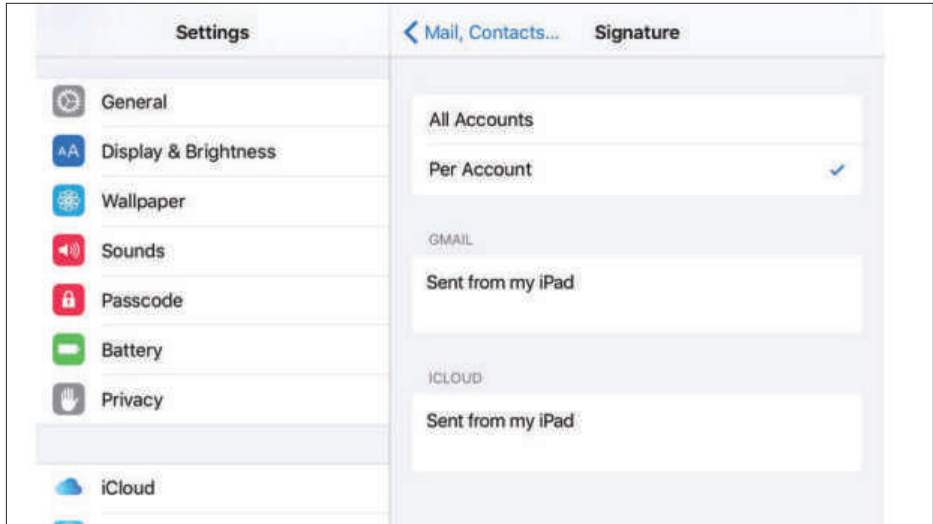
Mail has always been helpful with addresses, showing possible matches from your recent history and Contacts as soon as you start filling the 'To' field. With iOS 9, Mail also gained the ability to suggest contacts based on the people you usually email. As intelligent as it may be, there will be situations where you'll only email someone once and never want to contact them again, so it's best to remove them from your 'recent addresses' list.

Scroll down to the suggestion you want to delete. Tap the 'i' icon, then 'Remove from Recents'. You can't do this for those on your Contacts list, as they will always be suggested where relevant – if you want rid of them, you'll need to delete the contact.

## 13. Set a different signature for every Mail account

You'll be glad to know that you can edit the default signature (by default this would normally read 'Sent from my iPhone' or 'Sent from my iPad') for each of your email accounts independently, with little effort.

Go to Settings > Mail, Contacts, Calendars > Signatures, then choose 'Per Account'. This enables a separate signature field for each email account you've set up. Type or paste your preferred signatures, and Mail will automatically append them to each outgoing email message.



## 14. Flag messages in iOS Mail

iOS 9 offers top-level Mailboxes (VIP and Flagged) that each gather particular messages across all your inboxes and present those messages in one convenient list. They're great.

The Flagged mailbox displays any flagged messages – those you've marked with the dedicated Flag button. It makes it easy to quickly see your most important messages without having to scroll through other messages in your inboxes.

You can flag an email when you're viewing it by tapping the little flag icon in the top bar and selecting Flag.

## 15. Set VIPs and view VIP messages

iOS 9's VIP mailbox gathers messages from people you've designated as VIPs – your wife, your boss, your colleagues, your bookie... er... financial advisor – so you won't overlook those messages in the daily

flood of emails. To designate someone as a VIP, tap the 'i' icon at the right edge of the VIP mailbox (in All Mailboxes), then tap Add VIP and choose the person in your contacts list.

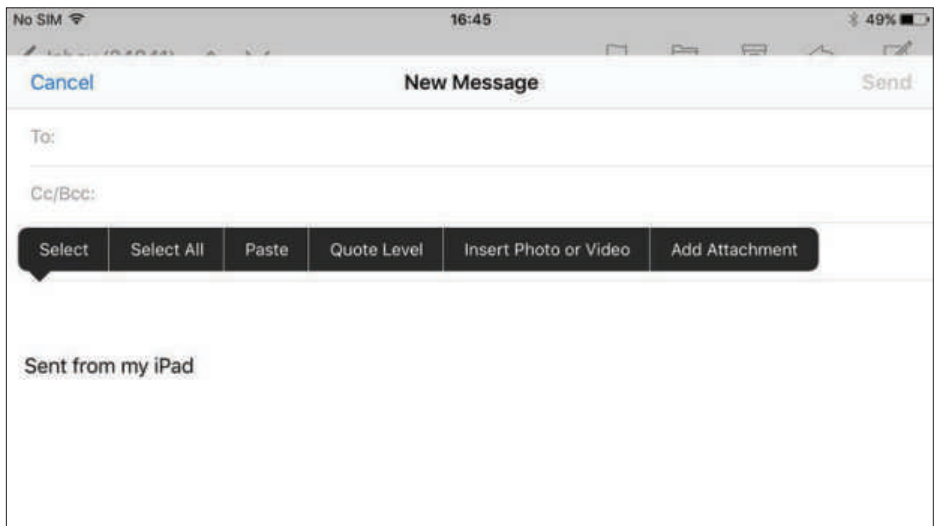
Alternatively, open an email from the person you want to add as a VIP, tap their name/email address and then tap 'Add to VIP' to achieve the same effect.

Tap VIP Alerts, and you're taken to Settings > Notifications > Mail > VIP, where you can configure notification settings for email received from VIPs.

## 16. Add photos and videos to messages

Suppose you snapped the perfect panorama and want to email it to your friend. You needn't start from the Camera or Photos app (although you can, by opening the photo you want to share, then tapping the square 'Share' icon and selecting the Mail icon).

Instead, head over to the Mail app and start composing your new message. Tap and hold a blank



bit of the message to bring up the contextual menu, then tap on Insert Photo or Video (you may have to tap the right arrow). You'll get the photo select screen. You can pop a photo or video clip into an email simply by tapping and holding on the message body. Simply select the file, and then select the level of compression to finish.

### **17. Jump back to drafts in iOS Mail**

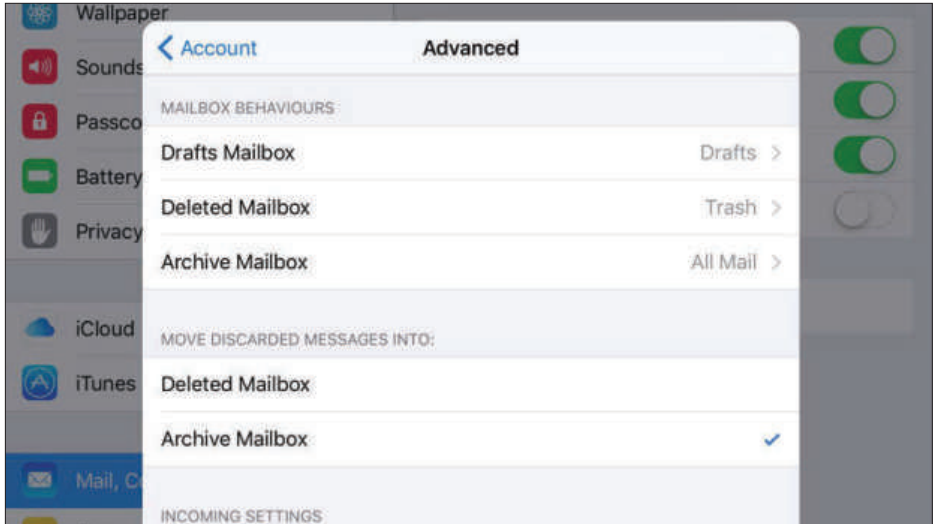
Maybe you abandoned a message before you tapped to send it. You needn't navigate deep into the Mail app's mailbox hierarchy to find your Drafts folder. Instead, you can tap and hold on the New Message icon to bring up a menu listing all your saved drafts. You can still select a totally new message from the drop-down menu that appears.

### **18. Delete messages in iOS Mail**

If you do enable archiving as an option for your messages, that doesn't mean you're no longer able to delete messages outright from your iPhone or iPad. Just tap and hold on the Archive button, and you'll get a second option: Delete Message.

### **19. Archive messages in iOS Mail**

To archive an email instead of delete it, simply navigate to Settings > Mail, Contacts, Calendar and tap on the relevant email account. Tap on the Account entry at the top, scroll down to the Advanced section, and tap on your email address; swipe down until you find the Archive Messages switch. Slide it to ON, and then make sure to tap the Done button in the upper-right corner twice to save the change.



Now, all instances of the Delete command in Mail will be replaced by an Archive button.

## 20. Show me more unread emails

Go to Settings > Notifications > Mail, and you'll see three sets of options. The Show item simply lets you choose how many unread email messages appear in Notification Center – the default is five, but this can be increased or lowered depending on your preference.

## 21. Adjust account notifications

To help make life a little easier for those with multiple Mail accounts, you can adjust notifications (not to mention their alert sounds) on a per-account basis.

Simply open Settings > Notifications > Mail and tap on the account that you want to edit. You'll get the standard Notification Centre options: alert style, app-icon badge, whether to show a preview of the

message and whether to view notifications on your device's lock screen, but it's unique to the account you selected. So you can choose to enable all options for your work account, but only some for a personal account.

## **22. Set a 'read' email as 'unread' in iOS Mail**

Sometimes you scan through an email, think you've got it and then realise none of it sank in. Or you might want to remind yourself to look again at a message's contents without putting it with the really important messages in Flagged. One option is to mark it as 'unread' which can be done by tapping the flag icon from within the email and tapping 'Mark as Unread'. Alternatively, in the email list view you can swipe an email to the right to mark it as unread.

## **23. Pick Siri's audio input**

If your car has a built-in speakerphone, or if you've got a Bluetooth accessory that has a microphone and speakers, you can choose which one Siri listens to for commands.

When you click and hold the iPad's Home button, you'll see a small 'i' icon to the right of the main Siri button. Tap it, and you'll get a menu of all the various inputs your iPhone can use; select the one you want.

## **24. Your own private IMDb**

You probably already know that you can use Siri to get information about what's playing at cinemas near you, but Siri's also an expert in pretty much every motion picture ever made. Not only can you ask about your favourite films, but you can also

make Siri do the legwork when, for example, you're curious about which films actors have appeared in together. You might ask, "What movies star both Susan Sarandon and Tim Curry?" And Siri will reply: *The Rocky Horror Picture Show* and *Rugrats in Paris*. Er, how interesting.

## 25. Punctuate

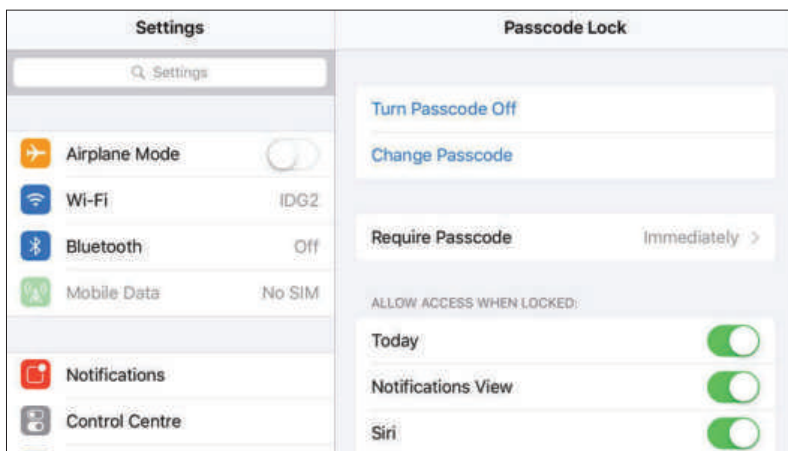
Saying punctuation aloud doesn't feel natural, but it can massively improve the readability of Siri-dictated emails. For instance:

Dear Jason comma new paragraph I'm working on that Siri story comma and I expect it will be ready soon exclamation mark

Other exciting punctuation is available: ampersand, asterisk, all caps on and all caps off (Caps Lock) and even winking face.

## 26. How to make Siri more secure

We'll end with a more serious tip. By default, Siri can be used even from a locked iDevice – which means





a thief could send messages to your contacts. To change this, go to Settings > Passcode and enter your passcode. Once accessed, simply switch Siri from ON to OFF.

## 27. Take better panorama photos

What's the secret to a well-composed panorama? A few simple principles will help you create to something memorable. First of all, avoid wobbly or crooked shots by sticking to the central line: this is basic but crucial stuff.

Also consider the composition before you start shooting and turning. Decide where you'll stop (bear in mind any ugly eyesores you want to keep out of shot) and think about lighting: a panorama incorporating both well-lit and gloomy areas may not work well. Trying to capture panoramic photos in dark situations will never end well, either. Finally, work (and move) slowly throughout for a neat shot.

## 28. Reverse panorama

While we're on the subject of panoramic photos, we've got one last tip for you. Normally, the Camera app prompts you to take panoramic photos from left to right – but what Apple doesn't make obvious is that the arrow can be reversed. To reverse the arrow and allow you to take a panoramic photo from right to left, simply tap once on the panorama guide to flip it to the opposite side of your screen.

## 29. Shared Photo Streams

You probably already know about the iCloud Photo Library, which shares images between your iOS devices (and Macs). But if you want to share photos

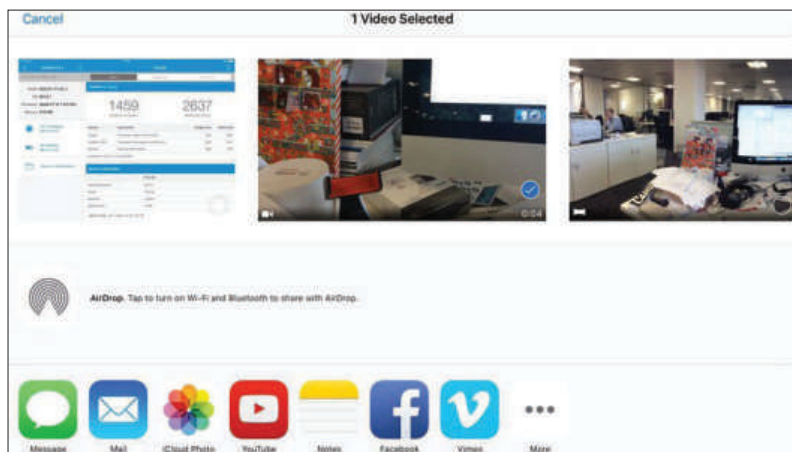
with specific friends, family or colleagues, you can also create Shared Photo Streams.

To create such a stream, open Photos and tap on the 'Shared' tab in the toolbar. In the upper left corner is a '+' button; tap that and enter a name for your shared stream, along with a list of people you'd like to invite.

Photos can be added from your existing photo albums or Camera Roll by tapping on the Share button and selecting Photo Stream, or by tapping Edit while viewing your shared stream and tapping the Add button that appears at the bottom. The people you've shared the photo stream with can comment on or 'like' your photos as well as uploading their own, and you'll get notifications whenever this happens.

### 30. Share videos on your iPad to YouTube

You can easily share your videos with your YouTube subscribers directly from the Photos app on your iPad. Simply find and tap on the video in your



Camera Roll, tap the share button and select the YouTube icon from the list. The same effect can also be achieved by tapping the 'Select' button in the top right hand corner of the icon view, and selecting the video you want to upload.

It's not just YouTube though, with the likes of Vimeo and Facebook also available in the Share sheet. Don't forget about AirDrop either, a straightforward option for when you want to send a video directly to someone over Bluetooth.

### **31. Remove red-eye on an iPad**

A built-in red-eye removal tool will help you sort out this most common of photographic problems, though it isn't a situation that iPad-ographers should find themselves in very often, due to the lack of a flash on the iPad. Anyway, find the imperfect photo in your Camera Roll and tap Edit (in the top right hand corner), then choose the red-eye option in the top left corner: the red circle with a diagonal white line through it.

It's worth mentioning that this icon is only displayed if iOS detects red-eye in the photo – which is both impressive and really annoying, especially if iOS doesn't detect red eye where it is present.

### **32. Improve privacy on your iPad**

You don't necessarily want your personal data accessible to every app that asks, and iOS is able to give you the kind of fine-grained control that you crave. Under the Privacy section of Settings, you can not only adjust which apps have access to your location, but also prevent them from accessing your contacts, calendars, reminders, photos and

Bluetooth sharing. Plus, if you use Twitter or Facebook, you can decide which of your apps can log in with your credentials. Just tap the appropriate section for any of these and slide the switch for the selected app to OFF.

### **33. Impose Restrictions**

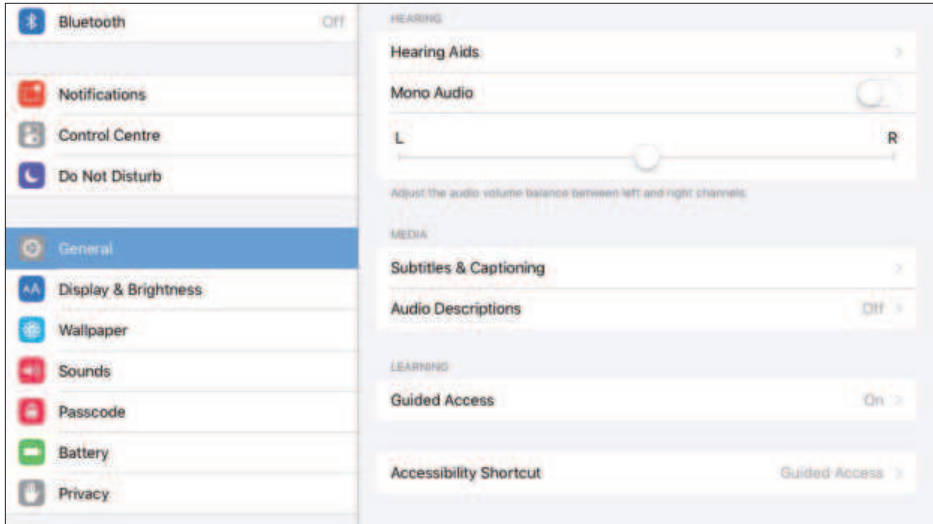
Go to Settings > General > Restrictions, tap 'Enable Restrictions' and you'll be prompted to enter a passcode. You can then select which features you would like to lock down on your iOS device. If you're planning to hand the iPhone over to one of your children, who has a habit of unintentionally deleting your apps, you can specifically disable that capability from the Restrictions screen. You can also prevent access to the iTunes Store, the iBookstore, Safari, Camera, FaceTime and other elements.

### **34. Set up Guided Access on your iPad**

While we're talking about limiting what your iOS device can do, now's a good time to mention Guided Access, which you turn on under General > Accessibility. Once you've enabled the feature, go into any other app and triple-click the Home button. That enters Guided Access.

Now, if you want, you can black out certain regions of the current app's interface. Say, for example, that the game your child will play has an omnipresent Settings button. You can trace a circle around that button, and that section of the app will ignore any taps.

The other key feature of Guided Access is that it disables the Home button, so your youngster won't accidentally quit the app prematurely. To exit an app



in Guided Access mode, you triple-click the Home button again, and provide your passcode.

One added benefit of Guided Access is that it can serve as a better Do Not Disturb, since it silences banner notifications and alert sounds.

### 35. Limit advertiser tracking

If you're going to restrict your children's access, you might as well restrict what advertisers can do too. In Settings, hit Privacy, then tap on Advertising way down at the bottom. On the screen that appears, you'll find two options. The first one, Limit Ad Tracking, provides an indicator to internet advertisers that you don't want them to track which adverts you've viewed and engaged with (which they do so they can show you ads that they think may be better suited to you).

The second option on this screen is a button to reset your advertising identifier – it's meant to be

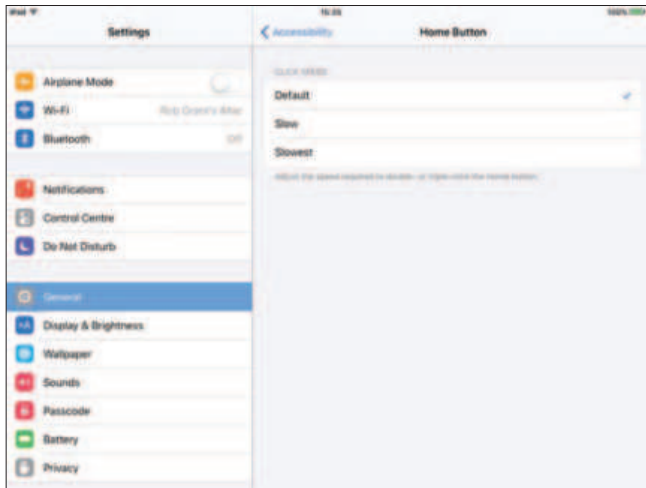
an anonymised tracker that advertisers can use to recognise your interest when showing their adverts in apps. If you start seeing in-app ads that seem to know you too well, you can reset your identifier here to start from scratch.

## 36. Manually manage iCloud space

Don't forget that you can control what iCloud stores for you in your online backup – especially if you're just using the free 5GB allotment that Apple offers. Find instructions [here](#).

## 37. Adjust Home button double-press

From within the Accessibility menu in the Settings app, there's a setting that lets you choose how quickly you need to double-press or triple-press the Home button for it to register as a single action, rather than separate presses. Simply tap on the 'Home Button' subsection and select your preference: Default, Slow or Slowest.



### 38. Assign a function to Home button triple-press

The Triple-click Home setting now allows you to choose a single action (Guided Access, VoiceOver, Invert Colors, Zoom or Assistive Touch) or multiple options that will appear in a menu when you perform a triple-press.

### 39. Access recent Safari browsing history

In Safari, tap and hold on the Back button to see a list of your recently visited pages, and tap and hold on the browser's New Tab Plus (+) button to get a list of recently closed tabs. If that's not enough and you need to see your complete browsing history, tap on the Bookmarks icon (book to the left of the URL field) and select 'History'.

### 40. Open web pages in the background

Safari on the Mac makes it easy to open linked web pages in a new tab, so you needn't interrupt what you're reading just because you also want to check out a few linked items. You get that same perk on iOS, although you need to enable it first. Visit Settings > Safari > Open Links and choose the 'In Background' option. Now, tap and hold on links in Safari to choose to open them in the background instead.

